

Foreign Direct Investment in the United States

Review and Analysis of Current Developments

A Report in Response to a
Request by the U.S. Congress



U.S. Department of Commerce
Economics and Statistics Administration
Office of the Chief Economist
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A Report Submitted to the Committee on Energy and Commerce, the Committee on Ways and Means, and the Committee on Foreign Affairs of the House of Representatives, to the Committee on Finance, the Committee on Commerce, Science and Transportation, and the Committee on Foreign Relations of the Senate, and to the Joint Economic Committee of the Congress in Response to Section 3(a) of the Foreign Direct Investment and International Financial Data Improvements Act of 1990.

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FOREIGN DIRECT INVESTMENT IN THE UNITED STATES

--A Review and Analysis of Current Developments

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INTRODUCTION

by Sumiye Okubo McGuire*

After years of concerns about the effects of U.S. direct investments abroad on U.S. trade, employment, and growth, public attention began turning in the mid-1980s to the impact of foreign investment in the United States. As the pace and magnitude of foreign investment, both portfolio and direct, into the United States have risen over the past decade or so, policy makers, businessmen, and the general public have become increasingly interested in assessing the impact of this investment on the U.S. economy. For the most part, the American public has given foreign direct investment in the United States mixed reviews, and are increasingly coming down on one side or the other of the issue: it is good or bad, positive or negative, growth promoting or detracting, for the economy as a whole or particularly, for specific industries. Often armed with anecdotal evidence -- press articles, speeches, and books have warned against the possible detrimental effects of foreign investment, such as fears of ownership of our real estate or control over our natural resources, productive capacity, technological capability, of an excessive influence over the political process, and of the potential threat to our national security.¹ On the other hand, proponents of foreign investment defend foreign investment as a means of promoting U.S. employment, technological progress, and U.S. competitiveness, and others conclude that it poses no threat to the U.S. economy.² Questions about the impact of foreign-owned businesses at the industry level can be attributed partly to the limitations of available data and analytical methods.

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¹For examples of opponents of foreign direct investment in the United States, see Martin and Susan Tolchin, *Buying into America: How Foreign Money is Changing the Face of Our Nation* (New York: Times Books, 1988); Pat Choate, *Agents of Influence: How Japan's Lobbyists in the United States Manipulate America's Political and Economic System* (New York: Alfred Knopf, 1990).

²For proponents of foreign direct investment in the United States, see Edward M. Graham and Paul R. Krugman, "Foreign Direct Investment in the United States," paper presented at the American Economic Association Meetings, December 19, 1990, and *Foreign Direct Investment in the United States* (Washington, D.C.: Institute for International Economics, 1989); Michael Becker, *Myths about Foreign Investment* (Washington, D.C.: Citizens for a Sound Economy Foundation, 1989); Norman J. Glickman and Douglas P. Woodward, *The New Competitors: How Foreign Investors Are Changing the U.S. Economy* (New York: Basic Books, 1990).

The U.S. government's policy position on foreign direct investment in the United States is reflected in the following statement in the *Economic Report of the President, Transmitted to the Congress, February 1991*.

The Administration supports maintaining an open foreign investment policy, with limited exceptions related to national security. This policy produces the greatest possible national benefits from all investments made in the U.S. economy. The United States has long recognized that unhindered international investment is beneficial to all nations, that it is a "positive sum game."³

To improve the federal government's information on foreign direct investment, on November 7, 1990, the President signed into law the "Foreign Direct Investment and International Financial Data Improvements Act of 1990." This legislation requires the Bureau of Economic Analysis (BEA) to exchange and share its confidential data on foreign direct investment in the United States with the Bureau of Census and the Bureau of Labor Statistics (BLS), and the Census Bureau to share its confidential data with BEA. These data have been collected for different objectives, using different methodologies, and can complement one another to permit fuller analysis of FDIUS. Other federal agencies with relevant data on FDI are authorized to share data. This sharing of data enhances the systematic examination of the impact of these investments. The law also requires that the Secretary of Commerce report annually to the Congress on the role and significance of foreign direct investment into the United States. This study responds to this requirement.

Objectives of the Study

This study examines the role and significance of foreign direct investment in the United States from 1977-1988, with updates to 1990 when data are available. The approach followed is to provide an overview of the scope

³Page 262, *Economic Report of the President, Transmitted to the Congress, February 1991, together with The Annual Report of the Council of Economic Advisers* (Washington: U.S. Government Printing Office, 1991).

and extent of foreign direct investment into the United States, and review where investment is being channeled and the importance of foreign investment in various U.S. industries.

The study first reviews definition and measurement issues, and then provides the macroeconomic and microeconomic theoretical foundations underlying factors motivating international investment flows, including their relation to balance-of-payments current and capital account balances. It then examines the macroeconomic factors influencing foreign investment, both direct and portfolio, and the benefits from foreign investment. The fourth section analyzes trends and patterns in foreign investment into the United States and provides an overview of the importance of foreign investment, changes in its role, comparisons with other countries, and the impact on the U.S. balance of payments. Section five explores the characteristics and performance of U.S. affiliates of foreign firms. The report then examines foreign investment

in five key industries -- electronics, automobiles, steel, chemicals, and banking -- in which foreign ownership is large and/or significant. The last section covers progress in the data linkage projects of Census, BEA, and BLS, and issues which need to be addressed in the future.

The analysis in this study is limited by large gaps and discontinuities in the data and lack of comparability in the currently available databases. Nonetheless, it provides a clear indication of the overall magnitude and importance of foreign investment in the United States. A more informed and complete analysis will be provided in the next annual report, which will be able to make use of the linked data from the Bureau of Economic Analysis, the Bureau of the Census, and the Bureau of Labor Statistics. Results of the reconciliation of BEA-Census data and BEA-BLS data, obtained from establishment-level data for foreign-owned companies, are expected to be available in 1992.

DEFINING AND MEASURING FOREIGN DIRECT INVESTMENT IN THE UNITED STATES

by Sumiye Okubo McGuire*

The United States remains, after three centuries, an attractive place for investment by foreigners in a variety of U.S. assets.¹ Indeed, foreign corporations, such as Royal Dutch Shell, Unilever, and Bayer, which have owned U.S. assets for decades, have benefited from, and made important contributions to, the growth of the U.S. economy. Throughout the past, the level of U.S. concerns about the benefits or potentially adverse impacts of external investments have periodically waned and heightened. As foreign ownership of U.S. assets expanded over the past decade, questions once again have been raised about the role and extent of their contributions to the U.S. economy.

In response to the rapid growth of foreign investment in the United States over the 1980s, the U.S. government has increased its efforts to develop an analytical picture of these developments and their impacts. Action has been taken to improve the data needed to identify and track foreign direct investment in the United States, including efforts to solve a number of definitional, statistical, and tracking questions. These issues are covered in the following sections.

Tracking Foreign Direct Investment

The U.S. government has recorded international flows associated with foreign direct investment in the United States and U.S. direct investment abroad for many years for several reasons. Data on foreign direct and portfolio investment have been collected since the early 1920s for producing the U.S. balance of payments and international investment position. These statistics are needed to monitor and assess the impacts of these investments on the U.S. economy. These efforts were formalized in the early 1940s when survey questionnaires on foreign investments in the United States were begun by the Treasury Department, and subsequently taken over by the

Department of Commerce in 1946.

The Department of Commerce began systematic collection of financial and operating data on U.S. affiliates of foreign firms (as well as foreign affiliates of U.S. firms) in the 1950s. These important additional data provide information on the overall operations of the affiliates, as opposed to transactions and positions between parent firms and their affiliates (as shown in balance of payments and direct investment position data). Major benchmark surveys requesting detailed data were conducted for outward investments in 1950, 1957, 1966, 1977, 1982, and 1989, and for inward direct investments in 1959, 1974, 1980, and 1987. Annual, less detailed surveys of samples of nonbank affiliates began in 1977 for inward direct investments and in 1983 for outward investments. Surveys to collect data on newly acquired or established inward direct investments began in 1979. Surveys are also conducted to collect data on capital expenditures of majority-owned foreign affiliates of U.S. firms.

Defining Foreign Direct Investment

The two types of private foreign investment are direct investment and portfolio investment. Accounting, legal, and statistical complexities make distinguishing between the two types confusing, and assessing their importance, often difficult. Thus, definitions of both types are crucial to understanding their trends and impacts.

Foreign direct investment in the United States, as defined by the U.S. government for reporting and statistical purposes, is the ownership by a foreign person or business of ten percent or more of the voting equity of a firm located in the United States.² A ten percent or more equity interest is considered evidence of a long-term interest in, and a measure of influence over, the management of the company. This definition of direct investment is specified in the International Investment and Trade in Services Survey Act.³ New foreign direct investment can

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¹For historical background, see Robert E. Lipsey, "Changing Patterns of International Investment in and by the United States," in *The United States in the World Economy*, ed. by Martin Feldstein (Chicago: University of Chicago Press, 1988).

²For the official definitions, see U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States, 1987 Benchmark Survey, Final Results* (Washington, D.C.: U.S. Printing Office, August 1990).

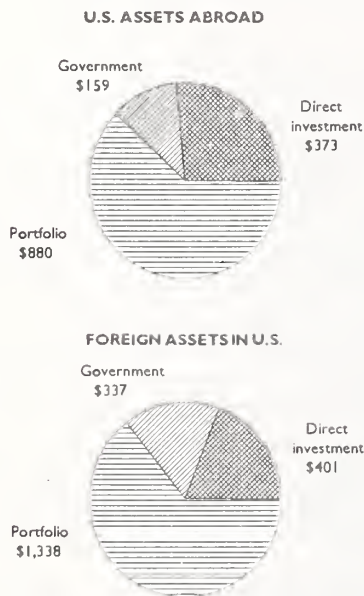
³Prior to 1974, the percentage cutoff was 25 percent.

take two forms -- acquisition of an existing business through "buyout" of all or part of a company's stock, or establishing a new facility or "greenfield" investment.

Direct investment does not necessarily involve an international transfer of financial capital. The investing foreign firm can acquire ownership partly or wholly, in exchange for technical know-how or managerial expertise, rather than financial capital. Moreover, financial capital that is exchanged can be wholly or partly raised from U.S. financial sources. In contrast to direct investment, portfolio investment can be in the form of bonds of U.S. firms or the U.S. government, and bank accounts. It can also be investment in securities, representing less than ten percent voting interest, and does not amount to management influence over the activities of the companies.

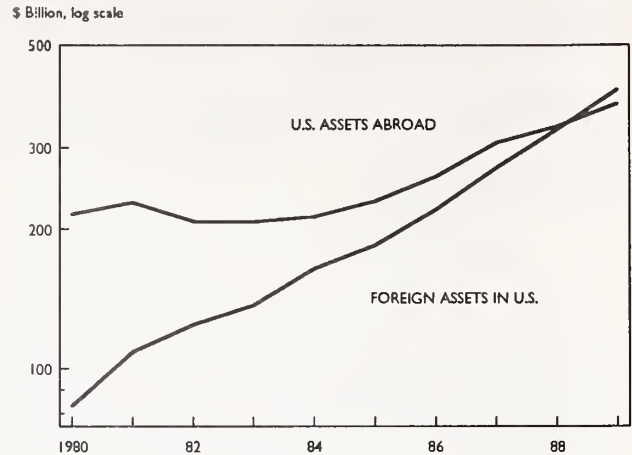
Less than 25 percent of the large and increasing volume of investment flows, both abroad and into the United States, are direct investments. More than 60 percent of the investment flows into and out of the United States are portfolio investments (Figure 1.1). The remainder are government transactions. While U.S. direct investment abroad (USDIA) has continued to grow steadily, foreign direct investment in the United States (FDIUS) has been growing much more rapidly. However, the difference in pace of growth depends on what method is used to value direct investment positions. Based on book-value data, in 1989, the foreign direct investment position in the United States surpassed the U.S. direct investment position overseas (Figure 1-2). Revaluations of direct invest-

Figure 1-1
International Investment Position, 1989
(Billions of dollars)



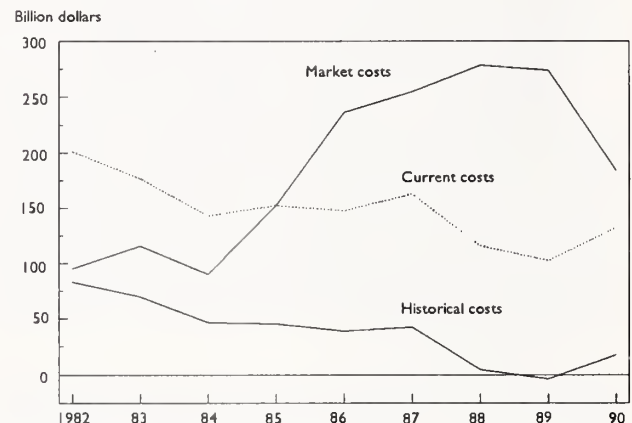
Note: Based on historical cost basis.
Source: Bureau of Economic Analysis.

Figure 1-2
Foreign Direct Investment Position at Yearend



Note: based on historical cost basis.
Source: Bureau of Economic Analysis.

Figure 1-3
Net Direct Investment Positions in the United States at Yearend



Source: Bureau of Economic Analysis.

ment data to market values and current (or replacement) costs do not show such a crossover in 1989. On the current cost basis, which attempts to value only tangible capital at replacement costs, USDIA has grown less in dollar terms from a much larger 1982 base than has FDIUS. On the market value basis USDIA has grown more in dollar terms but less in percentage terms than FDIUS which was relatively very low in the early 1980s (Figure 1-3).⁴

U.S. capital inflows also show that the pattern of direct investment in the United States differed from that of portfolio investments during the 1980s. These patterns suggest that factors motivating foreign direct investments in the United States differed substantially from those

⁴See J. Steven Landefeld and Ann Lawson, "Valuation of the U.S. Net International Investment Position," *Survey of Current Business* (May 1991), pp. 40-49.

motivating portfolio investment inflows. Portfolio investment inflows grew in the early 1980s, peaked in 1986, steadily declined from 1986 to 1989, and dropped sharply in 1990. Direct investment in the United States, on the other hand, rose steadily until 1989, and decreased slightly in 1990 (Figure 1-4).

Measuring Foreign Direct Investment

The principal sources of data on foreign direct investment in all industries in the United States are two agencies of the Department of Commerce, the Economics and Statistics Administration's Bureau of Economic Analysis (BEA) and the International Trade Administration (ITA). Data on selected industries are collected by other agencies. For example, the Department of Agriculture collects information on foreign-owned agricultural land, and the Department of Energy collects information on foreign direct investment in U.S. energy sources and supplies.

BEA, in response to a mandate under the International Investment and Trade in Services Survey Act, conducts quarterly, annual, and benchmark surveys (every five years) of foreign direct investment in the United States.⁵ These data are a comprehensive and reliable source of information on direct investment needed for inclusion in the U.S. international transactions accounts, the international investment position, and the national

income and product accounts, as well as for assessments of the impacts of direct investment for public policy decision making. Each successive benchmark survey has refined and expanded the data collected. The benchmark surveys are complete censuses, and comprise more information and cover more companies than the interim (quarterly and annual) surveys.

BEA data can be grouped into three broad categories:

- o Direct investment position and balance of payments data.
- o Data on financial structure and overall operations of U.S. affiliates of foreign companies (hereafter referred to as U.S. affiliates).
- o Data on U.S. business enterprises newly acquired or established by foreign direct investors.

The first type covers transactions and positions between U.S. affiliates and their foreign parents. These data are the source of official estimates of direct investment for the U.S. balance of payments accounts (formally the U.S. international transactions accounts), the U.S. national income and product accounts, and the international investment position of the United States. Balance of payments data include data on direct investment capital inflows from foreign parent groups to their U.S. affiliates and payments of income, royalties and license fees, and other service fees by U.S. affiliates to their parents.

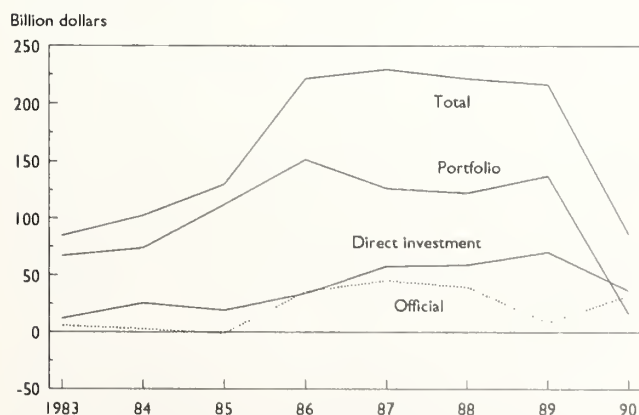
The second category includes data on the overall operations of U.S. affiliates. These data include: balance sheets and income statements, sales of goods and services, external financial position, property, plant and equipment expenditures, employment and employee compensation, U.S. merchandise trade, research and development expenditures, U.S. land owned and leased, and selected information by state in which the affiliate is located.

The last type covers new investments, specifically, businesses that are newly acquired or established by foreign direct investors. Information is collected on investments outlays -- how much foreign direct investors spend in a given year to acquire or establish new U.S. affiliates -- and on the portion of outlays funded by foreign sources. The survey also obtains data on the number and type of investments and investors and selected items on the operations of the new U.S. affiliates, including total assets, sales, net income, employment, and acres of U.S. land owned.

BEA data give a detailed picture of the levels, growth, origin and regional and industry distribution of the investment, and of the operating characteristics of the U.S. affiliates of foreign firms. The data are collected at the three-digit industry level, and are available for 135 separate industries. The data can be disaggregated by industry of U.S. affiliate, by country of foreign parent, by country and industry of the ultimate beneficial owner, or by the state in which it is located. They can also be cross-

⁵For a discussion of data collected by the Bureau of Economic Analysis, see Alicia M. Quijano, "A Guide to BEA Statistics on Foreign Direct Investment in the United States," *Survey of Current Business* (February 1990), pp. 29-37; and Bureau of Economic Analysis, *A User's Guide to BEA Information* (March 1991).

Figure 1-4
U.S. Capital Inflows, by Type of Investment



Note: Direct investment based on historical cost basis.
Source: Bureau of Economic Analysis.

classified by industry and country, by state and country, or by state and industry.

BEA collects data on a consolidated enterprise (firm) basis to meet the originally intended legislative requirement of analyzing the overall significance of and trends in direct investment. The enterprise is the sum of all activities or establishments of the firm and the establishment is a set of activities of a firm at one physical location. The critical, nonduplicative financial and operating data, such as balance sheets and income statements, that are needed to analyze the overall performance of U.S. affiliates only exist at the enterprise level. For any given enterprise, the sum of the operations of its establishments can contain significant double-counting of intercompany transactions and positions, and could include in its sales, for example, a number of intermediate transactions before reaching the final goods stage. When an enterprise fully consolidates its financial and operating information over all of its establishments, such duplication of intercompany transactions is eliminated and the sale of goods is recorded only once.

These data allow analyses of these enterprises vis-à-vis all other U.S. enterprises, but cannot be used to examine the detailed activities within diverse enterprises. Such an examination requires data collected at the establishment (plant) level. BEA does not collect data at the establishment level because collection of such data would greatly increase respondent burden. However, establishment level data are collected for all U.S. businesses by the Census Bureau and the Labor Department, and projects are underway to link BEA data on U.S. affiliates with the data collected by these agencies. These links will provide establishment level data for foreign-owned U.S. companies without any increase in the companies' reporting burden and without the need for BEA to duplicate data collected by the other agencies.

The International Trade Administration (ITA), Department of Commerce, collects information on specific foreign direct investment transactions under Executive Order 11858, which is based on the Foreign Investment Study Act of 1974, PL 93-479, and under Executive Order 11961, which is based on the International Investment and Trade in Services Survey Act. ITA compiles these data in an annual report, which analyzes major trends and significant individual transactions.⁶ ITA uses the same definition of foreign direct investment as BEA. Data are collected only from available public sources, such as print media, transaction participants, and other contacts, as well as from the public files of Federal regulatory agencies, such as the Securities and Exchange Commission, the Federal Trade Commission, and the Federal Reserve

Board, but not confidential BEA surveys. The aggregate ITA data are not comparable to BEA data, because coverage is not as comprehensive. Unlike BEA data, the ITA data have the advantage of identifying from public data individual transactions and their associated values -- information which BEA cannot lawfully disclose.

Data Problems

Limitations in measuring and tracking foreign direct investment in the United States have long been recognized by analysts, Congress, and the Administration. Many of these limitations have been addressed over the past 15 years, particularly as a result of passage of the International Investment and Trade in Services Survey Act that authorized the collection of complete and accurate information on such investment.

A major remaining difficulty in assessing the extent and impact of these investments, particularly at a detailed industry level, is indicated in a report from the House of Representatives, Committee on Energy and Commerce on the "Foreign Direct Investment and International Financial Data Improvements Act of 1990." In the report, Section 2, Findings, states that data collected by the Department of Commerce, Bureau of Economic Analysis, limit analysis of the activities of U.S. affiliates of foreign firms or comparisons to all U.S. industry, by industry groupings, because they are largely compiled on an "enterprise" basis, rather than on an "establishment" basis used by a number of other statistical agencies.⁷ This data distinction underlies many of the problems in assessing the extent of foreign direct investment in particular industries.

Both BEA and ITA data bases have problems that impair identifying, tracking, and assessing the performance and impact of U.S. affiliates of foreign firms, especially at the detailed industry level. ITA data represent only completed publicly reported transactions and should not be considered a comprehensive data base of the universe of foreign-owned U.S. companies. Also, ITA listings contain only the reported total cost of individual investments and are not considered to be a data base of financial and operating statistics. ITA data collection procedures do not enable determination of the proportion of the foreign-owned universe, or types of firms or industries, excluded in its reports. BEA, on the other hand, has attempted to be sure that its benchmark survey all transactors. Only very small affiliates are exempt from reporting in the benchmark surveys, and in 1987, coverage was close to 99 percent of value at the all-industries level for key items such as assets and sales. Coverage was slightly lower for land ownership, at about 96 percent of value.

⁶For the most recent transactions data, see U.S. Department of Commerce, International Trade Administration, *Foreign Direct Investment in the United States, 1989 Transactions* (Washington, D.C.: May 1990).

⁷Some data series, however, are collected by these agencies on an enterprise basis, such as: U.S. Bureau of the Census, *Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations*.

⁸See Lois Stokler and Guy V.G. Stevens, "The Adequacy of U.S. Direct Investment Data," in *International Economic Transactions: Issues in Measurement and Empirical Research*, ed. by Peter Hooper and J. David Richardson (Chicago: Chicago University Press, forthcoming), for a full discussion of problems with BEA data.

Most BEA methodology issues can be grouped into four classes: scope, comparability with all U.S. industry data (for example, those collected by the Bureau of the Census and the Bureau of Labor Statistics), frequency and timing, and valuation.⁸

Scope

Although BEA data cover all sectors of the U.S. economy, information on foreign-owned affiliates in banking is not as comprehensive as that for nonbank affiliates. BEA publishes annual and quarterly data on the direct investment position and balance of payments flows, annual data on new acquisitions and establishments of banks, and, in benchmark years, data on the number of affiliates and employees; employee compensation; property, plant, and equipment; net income on total assets and sales; and selected data by state. Financial and operating data for banks are published only in benchmark survey years. Banks are required by law to report details on financial and operating data to the Federal Reserve System and the U.S. Treasury, and thus, BEA does not collect these data, in large part to limit the burden of reporting.

Some data on U.S. affiliates' operations that would help in assessing the performance of these affiliates are not available from BEA because of the sizable burden on respondents to provide these data. For example, BEA reports data on total compensation to labor, including fringe benefits, but no information on hours worked or hourly compensation. Such data could help in comparing wage rates of all U.S. affiliates with those of U.S. producers. Price data also are not available to compute output or gross product in constant dollar terms in order to examine real growth in output and productivity.

Comparability with Other U.S. Industry Data

Problems in comparability mainly stem from differences in the scope of the business entity on which data are collected -- basically, enterprise versus establishment basis. Much more other U.S. government data by industry are collected on an establishment basis. This method of collection allows the firm to report data separately on each of its establishments, and each establishment's industry reflects its own activity. In contrast, in BEA surveys, most data for the whole enterprise is shown in the single major industry of the enterprise, even though some of the enterprise's individual establishments may be operating in other industries.⁹ For example, a U.S. affiliate, which derives 51 percent of its sales from an establishment in wholesaling, and 49 percent from an establishment in

manufacturing, is considered to be in the wholesale trade industry. In this case, comparing the sales and performance of U.S. affiliates in wholesale trade to the total U.S. wholesale trade industry would tend to overstate the importance of wholesale trade for the affiliates, and to understate their manufacturing activities (or whatever other industries in which they participate).

In its 1980 and 1987 benchmark surveys and in its annual surveys, however, BEA has required that U.S. affiliates distribute data on sales and employment among the sub-industries in which they have sales. These sales and employment data by industry of sales approximate those classified by industry of establishment and can be used to compare U.S. affiliates' performance with that of other U.S. businesses in individual U.S. industries.

Standard measures of the U.S. affiliates' performance are not completely comparable to those of any given U.S. sector or industry as a whole:

- o **International trade data** for U.S. affiliates in benchmark years are collected by product, and are reasonably comparable to data for all U.S. industry, collected by the U.S. Bureau of the Census from export and import documents filed with U.S. Customs, and classified on a product basis. However, only very broad product categories are collected. Also, in non-benchmark years, trade data for U.S. affiliates are available only by industry of affiliate, and hence, are not comparable to Census trade data by product.
- o **Changes in productivity** of U.S. affiliates cannot be compared to the corresponding overall U.S. industry because value added (gross product originating) data for U.S. affiliates are available only on an industry of affiliate, rather than industry of sales, or establishment basis.
- o **Compensation per employee** suffers from similar comparability deficiencies, at least for detailed industry groups. Aggregate information, for total manufacturing, is consistent, however.
- o **Property, plant, and equipment** data also are collected on an industry of affiliate basis, and thus, are not comparable to all-U.S. industry data on an establishment basis.
- o **R&D data** for U.S. industry are collected on an enterprise basis by BEA and the National Science Foundation, but the definition of an enterprise by BEA and the National Science Foundation is sometimes not consistent. More importantly, neither database can be used to examine the extent to which research and development of leading edge, or critical, technologies are being pursued by any industry or sub-industry grouping. Such data

⁹For a description of BEA classification procedures, see Bureau of Economic Analysis, *Foreign Direct Investment in the United States, 1987 Benchmark Survey, Final Results* (Washington, D.C.: August, 1990).

are not available from corporations, domestic or foreign.

- o In addition, **geographic locations** of each U.S. affiliates' separate activities are difficult to determine with any specificity, because data are collected on an enterprise basis, rather than on an establishment basis.

These problems in comparability will, in large part, be resolved with the availability of the results from the BEA data link project.

Frequency and Timing

Particular difficulties arise in attempting to observe performance and the operations of U.S. affiliates of foreign companies over a period of years. Industry definitions and other classifications used in one benchmark survey sometimes differ from those used in earlier surveys, while data collected in an earlier survey are no longer included, because of the tradeoff between new information needed and company reporting burdens. It is, therefore, not possible at present to examine year-to-year developments, for example, in imports of capital equipment versus components.

In addition, data are published on outlays by foreign firms to acquire and establish U.S. affiliates in any given year, but follow-up information on subsequent sales of parts of an acquired firm after purchase is not provided. Similarly, only first year expenditures are included in new establishment data, and expansions are difficult to determine. The data are not published separately on the operations of the two categories of affiliates. Such data would be useful in examining the impact of foreign direct investment on U.S. trade because the export and import behavior of a new establishment could differ from that of an

acquired affiliate.¹⁰ In addition, data are not provided so that the evolution of a given set of affiliates' activities over time from, for example, wholesaling to assembly to more sophisticated manufacturing, to undertaking R&D, can be examined.

Valuation

A number of researchers have raised the issue of underestimation of foreign direct investment because, in the past, BEA has used the historical book value provided by companies, rather than market values, to measure direct investment position.¹¹ Depending on the method used to estimate market values, the range of the extent of underestimation is wide. BEA recently undertook a major project to revalue the foreign direct investment positions to current market values, and these estimates are published in the *Survey of Current Business*, May 1991.

Historical costs are used throughout this report because the revaluations of foreign direct investment have been made for only total accumulated values of FDI. The recently released revaluations on current costs and market values are not used in this report except in a few clearly labeled discussions of aggregate values. BEA has not revalued to these new bases the FDI for individual industries nor operating data for U.S. affiliates of foreign firms. Historical costs are thus used as a means of gauging performance of U.S. affiliates in the aggregate and in the specific industries examined in this report.

Report Analysis

The following sections of this report provide an overview of trends in foreign direct investment in the United States and case studies of several key industries. While the depth, scope, and accuracy have been somewhat limited by the methodology issues identified, the available data provide a fairly clear picture of developments in foreign direct investment in the United States. When appropriate, problems of comparability and consistency are noted, and the conclusions, duly qualified. Future reports will have the benefit of further data collection improvements, including the BEA-Census linked data project underway at the time of this report.

¹⁰*Ibid.*, pp. 18-20.

¹¹See Robert Eisner and Paul J. Peiper, "The World's Greatest Debtor Nation," paper presented to Joint Session of North American Economics and Finance Association and American Economic Association, New York, New York, 1988; Michael Ulan and William G. Dewald, "The U.S. Net International Investment Position: Misstated and Misunderstood," in James A. Dorn and William A. Niskanen, eds., *Dollars, Deficits, and Trade* (Boston, MA: Kluwer Academic Publishers, 1989).

FACTORS DRIVING FOREIGN DIRECT INVESTMENT

by Sumiye Okubo McGuire and J. Steven Landefeld*

Analysts in this country and abroad have produced a large body of literature examining the factors that drive foreign investment flows. Although no fully successful formal model has been developed, these studies provide analytical frameworks to explain the causes of foreign investment, and in particular, foreign direct investment. These frameworks do not distinguish between the basic motivations of foreign investors in the United States and those of U.S. investors abroad. The major differences lie in international economic conditions and national treatment.

The following brief review of the determinants that help explain why foreign direct investment takes place provides a means for understanding the recent increases in foreign direct investment in the United States, and a basis for drawing judgments about the performance of U.S. affiliates of foreign firms and their effects on the U.S. economy and U.S.-owned businesses. Analytical studies generally approach foreign direct investment from one of two perspectives: classical investment theory and industrial organization theory.¹

Two Analytical Approaches

The first perspective, sometimes called the cost-of-capital approach, is based on classical investment theory which, extended to the international realm, says that capital moves in response to changes in real interest rate differentials between countries, and transactions take place between independent buyers and sellers of financial assets. Foreign, like domestic, investors weigh incremental expected returns against the marginal cost of capital, and are motivated by the desire to earn the highest rates of return for any given level of risk, and to hedge against interest- and exchange-rate fluctuations, by diversifying asset holdings.² This approach explains portfolio, as well as direct, investment by foreigners.

The second perspective, often termed the industrial organization approach, is based on the theory of the firm, and explains investment activity in terms of strategic behavior of the firm, specifically, the multinational corpo-

ration. This approach explains why a multinational firm makes direct investments abroad and why it attempts to extend control over its sales of goods and services outside of its own national boundaries. A firm expands its activities overseas: (1) to maintain profitability while reducing its prices when faced with lower competitors' prices -- sometimes due to its own rising production costs, rising wages, or declining productivity, or it may be facing adverse changes in foreign currency exchange rates; (2) to maintain or increase worldwide market share; (3) to gain or retain access in an overseas market, especially in times when trade restrictions are threatened; (4) to exploit, and maintain control over, an advantage specific to the firm such as a management, marketing, and/or technology, or a comparative advantage in producing in the foreign market; (5) to improve the firm's ability to meet the overseas market's needs through special product design and/or service; and, among other factors, (6) to take advantage of the political stability and open-door policy that exist in the United States.³

¹See Edward M. Graham and Paul R. Krugman, *Foreign Direct Investment in the United States* (Washington, D.C.: Institute for International Economics, 1989); and Saul Lizondo, "Foreign Direct Investment," in *Determinants and Systemic Consequences of International Capital Flows*, a Study by the Research Department of the International Monetary Fund (Washington, D.C.: International Monetary Fund, March 1991). Lizondo provides a detailed review and classification of the various theories of foreign direct investment.

²See Gary C. Hufbauer, "The Multinational Corporation and Direct Investment," in *International Trade and Finance: Frontiers for Research*, ed. by Peter B. Kenen (Cambridge: Cambridge University Press, 1975); Jamuna P. Agarwal, "Determinants of Foreign Direct Investment: A Survey," *Weltwirtschaftliches Archiv*, Vol. 116, Heft 4 (1980).

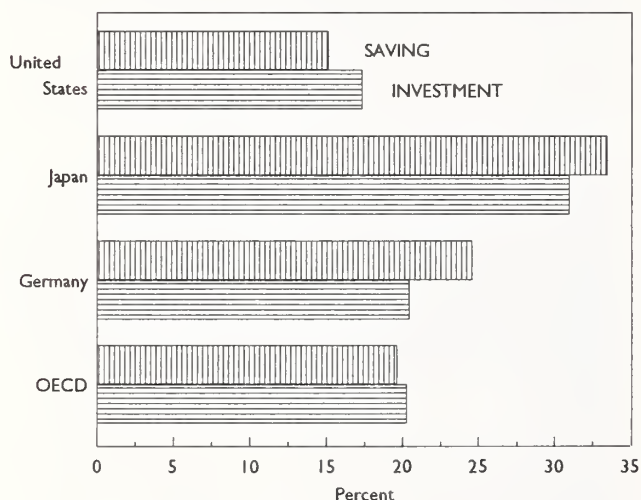
³See Stephen H. Hymer, "The International Operations of National Firms: A Study of Direct Foreign Investment," a Ph. D. Dissertation, 1960, Massachusetts Institute of Technology (Cambridge, MIT Press, 1976); John H. Dunning and Alan M. Rugman, "The Influence of Hymer's Dissertation on the Theory of Foreign Direct Investment," in honor of Stephen H. Hymer: The First Quarter Century of the Theory of Foreign Direct Investment, *The American Economic Review*, (May 1985), pp. 228-232; David J. Teece, "Multinational Enterprise, Internal Governance, and Industrial Organization," in honor of Stephen H. Hymer: The First Quarter Century of the Theory of Foreign Direct Investment, *The American Economic Review* (May 1985), pp. 233-238.

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Macroeconomic and Microeconomic Influences

These analytical approaches explain what motivates foreign direct investment. Specifically, they help to explain the large capital inflows into the United States during the first half of the 1980s. At the macroeconomic level, capital flows responded to real interest-rate differentials which reflected the savings and investment imbalances in the United States and major industrial countries, divergences in the monetary-fiscal policy mix in the United States and other countries, specifically, Japan and West Germany,⁴ and in relative rates of inflation (Figure 2.1). The United States in the early 1980s saw a rising relative rate of return on investment, as its saving declined, real interest rates rose, and the dollar appreciated as the demand for dollars increased. Increased demand for dollars to purchase U.S. assets contributed to a 64 percent rise in the real multilateral trade-weighted value of the dollar between 1980 and 1985. Although changes in trade respond with a lag to changes in exchange rates, the rapid rise in the dollar significantly reduced the price competitiveness of U.S. exports, increased the attractiveness of U.S. imports, and pushed the current account deficit to record levels in the mid-1980s (Figure 2-2).

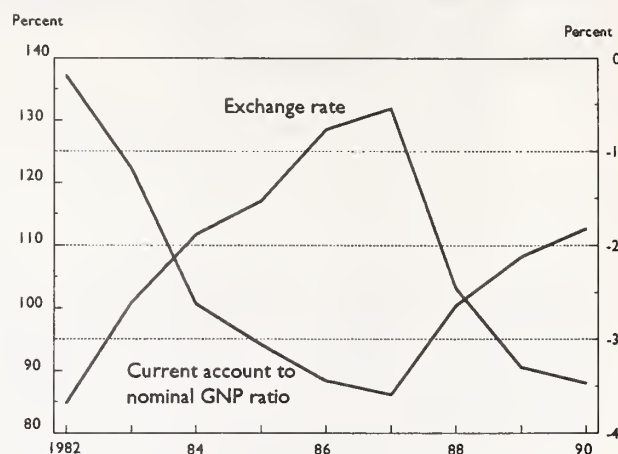
Figure 2-1
Saving and Investment as Share of
Gross Domestic Product, 1988



Source: OECD National Accounts.

⁴See Morris Goldstein, Donald J. Mathieson, and Timothy Lane, "Determinants and Systemic Consequences of International Capital Flows," in *Determinants and Systemic Consequences of International Capital Flows*, A Study by the Research Department of the International Monetary Fund (Washington, D.C.: International Monetary Fund, March 1991), pp. 1-45.

Figure 2-2
Trade Balance and Exchange Rate
(Current Account/Nominal GNP) & Real
Exchange Rate, 1982-90



Note: Exchange rates are lagged eight quarters to illustrate their lagged relationship to the change in the trade balance.

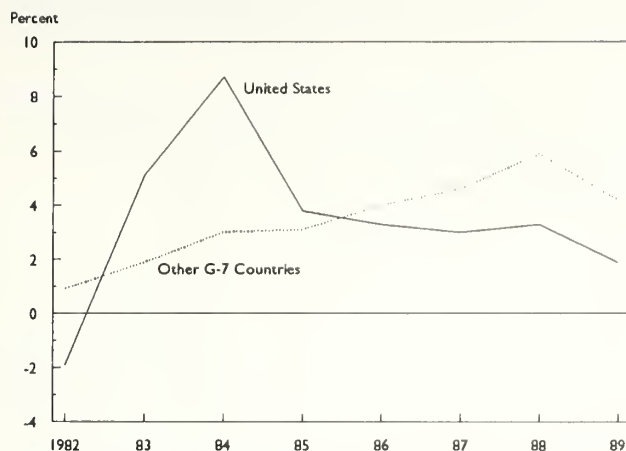
Source: Bureau of Economic Analysis, Bureau of the Census, and Federal Reserve Board.

The U.S. market became a more desirable place to invest, providing more attractive investment opportunities between 1981-86 than earlier, in part, due to changes in the regulatory environment and tax rules which encouraged capital investment. Lower tax rates and reduced inflation in the 1980s also contributed to robust economic growth in the United States relative to Europe and other countries. In the first half of the 1980s, rapid growth of domestic demand in the United States relative to growth in other countries spurred U.S. demand for imports and restrained foreign demand for U.S. exports. Overseas investors benefited from an improving return on foreign investment in the United States.

In the first half of the 1980s, European investors, in particular, benefited from better economic performance of the U.S. economy and higher returns than at home. For many investors in countries outside of Europe, the U.S. offered a positive climate from higher taxes, debilitating inflation, and structural rigidities. Foreign investors sought to reduce portfolio risk by diversifying investments in the U.S. stock market. Capital flight from the exchange and capital controls imposed by the governments of heavily-indebted third world nations in an attempt to contain their rapidly mounting debts also spurred demand for U.S. assets.

After 1985, a number of changes in macroeconomic conditions influenced relative rates of return, exchange rates, trade, and foreign investment in the United States. In early 1985, the dollar and exchange rate started to decline, and the United States began to ease monetary policy. Moreover, changes in U.S. tax laws, including the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) and the Tax Reform Act of 1986, coupled with improve-

Figure 2-3
Growth of Real Domestic Demand
U.S. versus Other G-7 Countries, 1982-89



Note: Domestic demand equals GNP less net exports.

Source: *OECD Economic Outlook*, and *OECD Historical Statistics*.

ments in relative economic growth and the business climate abroad, and improvements in the U.S. fiscal deficit, reduced the gap between U.S. and foreign real interest rates and the after-tax rate of return on U.S. investments (Figure 2.3). U.S. demand for imports declined, and foreign demand for U.S. exports rose, but only after a lag in the decline in the U.S. dollar. These changes, in essence, reflected a narrowing of the saving and investment gap, and a fall in the current account deficit, which peaked in 1987.

At the microeconomic level, these macroeconomic conditions explain the aggregate inflow of foreign direct investments in the United States -- not its composition. Interest-rate differentials, exchange rate changes, and differences in tax policies all also influence the timing of the direct investment decision. They are included in the strategic decisions of the multinational corporation, as it decides where to locate its investment, in what industry(ies), what form (acquisition versus new plant establishment -- "greenfield"), and extent of its involvement in the operations of the firm.

The strategic decisions of the multinational corporation on foreign direct investment hinge on factors internal and external to the firm, as explained by the industrial organization approach to foreign direct investment. There is suggestive evidence that a firm chooses to invest abroad when internal factors or firm-specific advantages outweigh the additional costs of establishing operations in distant, culturally diverse locations. These advantages could include brand name, technological and managerial superiority, marketing skills, access to markets, and economies of scale. The firm, in its desire to maintain control over these advantages or assets, prefers to substitute transactions within the firm for transactions in the market place, such as exporting its products or

selling its special knowledge and skills or technologies. Empirical studies indicate that depending on the market is particularly costly in industries with vertically integrated manufacturing processes, knowledge-intensive and/or communication-intensive products, or goods requiring quality assurance. These advantages are not uniformly distributed across countries, industries, or enterprises, and can change over time. Thus, the level and pace of foreign direct investments in the United States are likely to differ across industries and countries, and to change over time.⁵

Strategic decisions are particularly affected by factors external to the firm when there are only a few large firms world-wide in the same industry. In that instance, in order to gain or maintain market share, one firm's foreign direct investment in one national industry is likely to induce its competitors to quickly follow suit. Similarly, one firm may invest in a foreign rival firm's home market to increase market share.

Changing Global Financial Markets

While these analytical approaches provide insights into causes of foreign investment and its composition, a number of important developments have taken place over the past decade in the world economy and in the international financial markets which have encouraged integrated and relatively open global financial markets. Integrated financial markets have greatly increased net and gross capital flows among industrial countries, especially in direct and other investments into the United States, as investors sought the highest rates of return on assets, and foreign investors and foreign financial institutions sought participation in major financial markets. These changes include the deregulation of financial markets among major industrial countries, elimination of capital controls by a number of major industrial countries, and advances in communications technologies.

- o Many industrial countries, including the United States, Japan, and the United Kingdom, began deregulating financial markets, leading to rapid changes in the financial institutions within these countries, the types of financial instruments used, and an increased volume of transactions, which these institutions could manage.
- o A number of industrial countries, including Japan, Italy, and France, also began eliminating controls and barriers to international financial transactions. These changes greatly facilitated the international flows of capital, especially into the United States.
- o The rapid advances in telecommunications technologies enabled companies to set up worldwide networks to link lenders and borrowers, twenty-

⁵See *op. cit.*, Lizondo and Graham and Krugman.

four hours a day around the globe. These technologies also eased the management control of multinational corporations' operations, encouraging the globalization of R&D, production, and distribution in many of the fastest growing industries and markets.

Another major factor shifting the scale of FDI upward in the United States in the 1980s has been the fact that the U.S. financial market is sufficiently large to accommodate efficiently massive blocks of funds which may flow out of foreign capital markets, as a result of very high levels of national saving relative to investment opportunities.⁶

The large increase in the volume of foreign direct investment over the past decade also reflects the expanded role of multinational corporations in the world economy. They have changed the way they reach markets -- not only through exports, but increasingly through production and sales by affiliates. Capital flows have become as important as the substantial flows of goods and services traded in and out of the United States.⁷

⁶See Rachel McCulloch, "Why Foreign Companies Are Buying into U.S. Business," *The Annals of the American Academy of Political and Social Science* (forthcoming, July 1991).

⁷See DeAnne Julius, *Global Companies and Public Policy: The Growing Challenge of Foreign Direct Investment* (New York: Council on Foreign Relations Press, 1990), especially Chapter 2.

MACROECONOMIC SETTING OF FOREIGN DIRECT INVESTMENT

by Michael R. Darby and Sumiye Okubo McGuire*

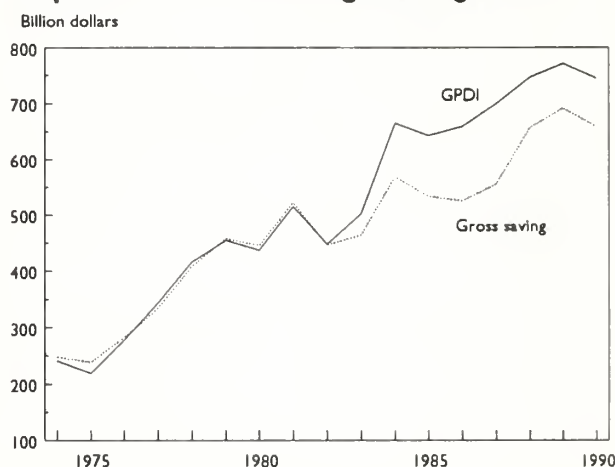
Macroeconomic factors here and abroad have been the major determinants of the size and the rate of increase in foreign investment--direct and portfolio--in the United States in the last decade. These factors include saving and investment rates, monetary and fiscal policies, interest rates, inflation, and exchange rates. This chapter examines foreign investment from a macroeconomic as opposed to a microeconomic perspective. It provides a broad macroeconomic context for assessing the economic impact of foreign investment on the U.S. economy through its effect on interest rates, capital formation, employment, productivity, and standards of living. It does not consider microeconomic factors, such as relative costs, the need to establish distribution outlets in the world's largest market, and the desire to reduce trade frictions, all of which determine the distribution of foreign direct investment across industries and of total investment between direct and portfolio investment.

Macroeconomic Causes of Foreign Investment in the United States

A major factor encouraging the rapid growth in the inflow of foreign capital -- direct and portfolio -- into the United States in the 1980s was the saving-investment imbalance here and abroad. Gross saving in other countries, such as Japan and West Germany, exceeded their domestic investment demand, while U.S. gross saving did not keep pace with the rapidly increasing U.S. capital needs. Throughout most of the postwar period up to the 1980s, U.S. gross domestic saving moved roughly in line with, and was more than sufficient to finance, U.S. gross private domestic investment. However, in 1983, the U.S. saving and investment growth rates began to diverge, as the United States started a long period of economic expansion. The divergence in the saving and investment

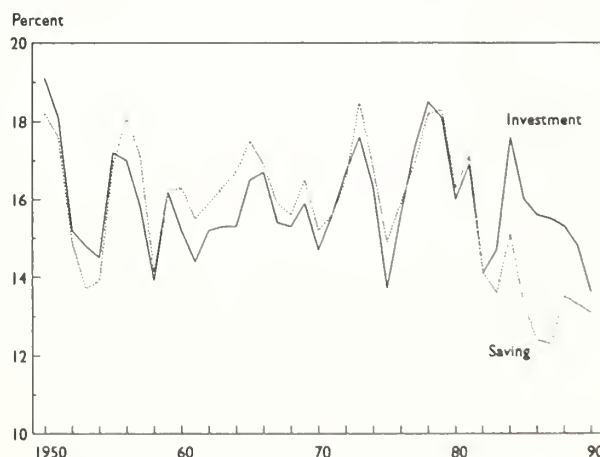
rates produced a large absolute gap between gross saving and investment, in 1987 peaking at \$155 billion (Figure 3-1) and as a share of GNP (Figure 3-2).

Figure 3-1
U.S. Gross Private Domestic Investment Outpaces U.S. Gross Saving Starting in 1983



Source: Bureau of Economic Analysis.

Figure 3-2
Ratio of Gross Private Domestic Investment & Gross Saving to U.S. GNP (In current dollars)



Source: Bureau of Economic Analysis.

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In the early 1980s, U.S. gross domestic investment rose, reflecting reductions in taxes on business investment and the effects of economic recovery. Moreover, the expected real after-tax rates of return on investment in the United States increased, significantly improving the attractiveness of U.S. investment (Figure 3-3). U.S. tax reform and a reduction in inflation lowered effective tax rates on investment, and there was a shift away from an anti-business political climate in the United States.

Gross domestic saving failed to keep pace with this growth in domestic investment in the 1980s. Government dissaving rose, as a result of a sharp increase in the federal budget deficit, which more than offset a rise in the surplus in state and local government budgets. Private saving fell, as a drop in the household saving rate more than offset the small rise in the business saving rate.

The increase in domestic investment demand relative to desired domestic saving raised real interest rates in the United States relative to other countries. These high real interest rates in the United States and improved expectations for after tax rates of return significantly improved the attractiveness of both portfolio and direct investment in the United States relative to elsewhere. Contributing to the attractiveness of investment in the United States was the liberalization of capital markets and capital flows by several major industrial countries, particularly Japan. This increase in the attractiveness of investment in the United States caused a large inflow of foreign capital into the United States. The resultant appreciation of the dollar exchange rate had a negative impact on the U.S. trade balance, and the current account deficit reached record levels in the mid-1980s. The increase in the U.S. current account deficit was also due to U.S. demand for imports that was spurred by robust relative growth in the United States and foreign demand

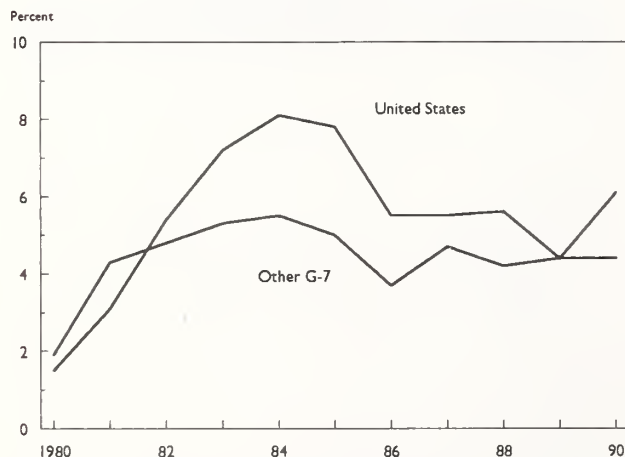
for U.S. goods that was restrained due to slower economic growth abroad.¹

Although foreign capital inflows into the United States remained large throughout the 1980s, in the latter half of the decade, the rate of increase in these inflows slowed, as the gap between U.S. saving and U.S. investment narrowed. Macroeconomic conditions changed, influencing capital flows, relative rates of return, exchange rates, and trade. In the mid-1980s, the rate of U.S. economic growth slowed compared to other industrial countries, the United States raised taxes on capital, the dollar exchange rate began to decline, and ultimately the growth of U.S. demand for imports fell and foreign demand for U.S. exports rose. The difference between U.S. and foreign real rates of interest was reduced, and changes in U.S. tax laws, including TEFRA and the Tax Reform Act of 1986, removed many of the tax incentives created by the 1981-82 Tax Act to encourage U.S. corporate investment.² The rate of increase of U.S. domestic investment dropped as a result of the fall in economic growth and a reduction in the relative after-tax real rates of return. U.S. saving rebounded partially as the federal deficit declined as a percent of GNP, although this reduction was offset by further declines in the private saving rate in the late 1980s (Figure 3-2).

U.S. Saving-Investment Imbalance

The gross saving-investment identity in the national income and product accounts (NIPAs) provides a useful way of summarizing the macroeconomic factors influencing foreign investment, both portfolio and direct. Gross saving is the sum of gross private saving -- personal saving and business saving -- and government saving. Gross saving equals the sum of gross private domestic investment and net foreign investment. Gross private domestic investment includes new plant and equipment, inventories, and housing. Net foreign investment equals the current account balance, which measures the excess of receipts from foreigners (such as payments for exports) less payments to foreigners (such as our payments for imports and interest paid on government bonds owned by foreigners). Alternatively, net foreign investment is equal to the international capital account balance which mea-

Figure 3-3
Real Long-Term Interest Rates
(Average annual rate)



Note: 1989 and 1990 are OECD estimates.

Source: OECD Economic Outlook Historical Statistics.

¹Commentary by Michael R. Darby on "The U.S. External Deficit: Its Causes and Persistence," by Peter Hooper and Catherine L. Mann in *U.S. Trade Deficit: Causes, Consequences, and Cures*, Proceedings of the Twelfth Annual Economic Policy Conference of the Federal Reserve Bank of St. Louis, ed. by Albert E. Burger (Norwell, Massachusetts: Kluwer Academic Publishers, 1989).

²See Joel Slemrod, "The Impact of the Tax Reform Act of 1986 on Foreign Direct Investment to and from the United States," Working Paper No. 3234, National Bureau of Economic Research (January 1990), and Myron S. Scholes and Mark A. Wolfson, "The Effects of Changes in Tax Laws on Corporate Reorganization Activity," Working Paper No. 3095, National Bureau of Economic Research (September 1989), for a discussion of the hypothesis that changes in the tax laws encouraged foreign direct investment, especially through mergers and acquisitions by foreign firms.

sure the excess of foreign capital inflows less U.S. capital outflows.³

$$\text{Gross saving} = \text{Gross private domestic investment} + \text{Net foreign investment}$$

$$\text{Gross saving} = \text{Personal saving} + \text{Corporate saving} + \text{Noncorporate saving} + \text{Government saving}$$

This accounting identity holds at all times. If gross private domestic investment rises and saving does not match this increase or if gross saving -- government and private -- falls and gross private domestic investment does not decline proportionately, the gap is closed by an increase in net foreign investment. An alternative way of viewing this saving-investment identity is as follows: a fall in national saving or rise in gross private domestic investment is equivalent to a rise in spending by individuals, government, and business. When domestic spending exceeds domestic production--as it did in the United States in the 1980s--the excess is supplied by net imports of goods and services.

The role of foreign capital was particularly important in the 1980s, since the United States has one of the lower investment rates among the major industrialized nations of the world. Without foreign capital, a reduction in the U.S. investment rate would have likely taken place, leading to a fall in U.S. productivity growth and future standards of living. Until the 1980s, U.S. gross saving had been sufficient to finance gross private domestic invest-

ment, as well as investment abroad (Table 3-1). However, in the 1980s, as the federal budget deficit rose, the government saving rate fell from an average of -0.4 percent of GNP between 1950 and 1979 to -2.5 percent between 1980 and 1990. Federal dissaving was partly offset by a rise in State and local government saving.

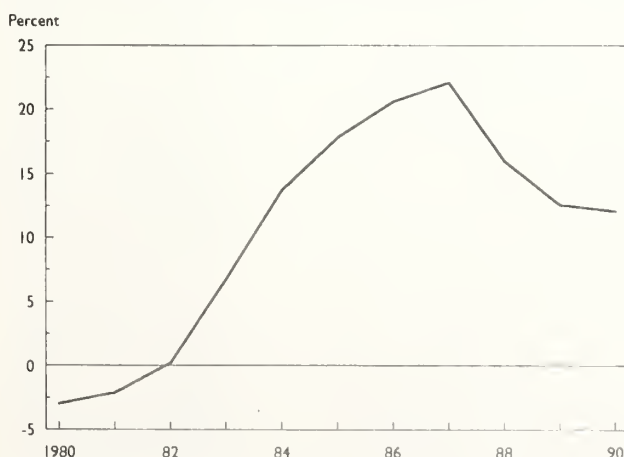
Private saving declined somewhat, as a sharp decline in household saving -- from a 5.0 percent average between 1950 and 1979 to a 3.7 percent average between 1980 and 1990 -- was partly offset by a rise in business saving -- from a 11.8 percent average to a 12.7 percent average. Although this decline in private saving is imperfectly understood, it has been attributed to changes in demographics and the rise in stock market values during the 1980s. The rise in the proportion of younger and older families, with low saving rates, and the fall in the proportion of middle-aged groups with high saving rates, have reduced overall saving. Darby, Gillingham, and Greenlees, however, show that private saving in the 1980s conforms almost exactly to that predicted based on a model of consumer spending driven by permanent income, transitory income, and real money balances. In their analysis private saving is actually increased by higher government deficits, but this effect is dominated in the mid-1980s by those due to transitory income and real money balances.⁴

The net result of these changes in private and government saving rates was a decline in the national saving rate from an average of 16.3 percent of GNP between 1950 and 1979 to 13.9 percent between 1980 and 1990. Gross private domestic investment in the 1980s

³Errors and omissions--the statistical discrepancy between the current account balance--is ignored in this discussion and the numbers that follow. It is implicitly assumed that the bulk of errors and omissions are unrecorded capital flows, which is consistent with most analysts' assessment of the U.S. statistical discrepancy.

⁴For additional insights into consumption and saving behavior in the United States from 1981 to 1989, see Michael R. Darby, Robert Gillingham, and John S. Greenlees, "The Impact of Government Deficits on Personal and National Saving Rates," *Contemporary Policy Issues*, forthcoming.

Figure 3-4
Net Foreign Capital Inflows as Percent of Gross Private Domestic Investment



Source: Bureau of Economic Analysis.

Table 3-1
Sources of Finance for Domestic Investment, 1950-90
(In percent of GNP)

	1950-79	1980-90
Gross private domestic investment	16.0	15.5
Equals:		
National saving	16.3	13.9
Private	16.8	16.4
Household	5.0	3.7
Business	11.8	12.7
Government	-0.4	-2.5
Federal	-0.6	-3.7
State & local	0.2	1.2
Plus:		
Net foreign capital inflows	-0.3	1.6

Note: Detail may not add to totals because of rounding.

Source: Department of Commerce, Bureau of Economic Analysis.

exceeded national saving, which was supplemented by net capital inflows from abroad, with roughly one-fifth of the net inflows accounted for by direct investment.

Foreign Saving-Investment Imbalances

Just as the U.S. saving-investment gap is the main factor explaining capital inflows into the United States, saving-investment imbalances abroad help explain the capital outflows from surplus countries such as West Germany and Japan. For example, while the United States has one of the lowest saving rates among the major industrialized nations, Japan has the highest saving rate. Moreover, the high saving rate helps to explain the large capital inflow from Japan into the United States. High prices for land, housing, and consumer goods along with Japanese tax policies encourage saving in Japan. While the excess of saving over investment creates very low real rates of return in Japan, the high U.S. real rates of return make investment in the United States very attractive to Japanese investors.

Increasing Integration of World Capital Markets

Increasingly integrated world capital markets have contributed to capital inflows into the United States. Increased capital mobility and interdependent national capital markets have resulted from the widespread application of improved communications technologies, and the deregulation of financial markets and easing of restrictions on capital flows in a number of countries. Effective monetary and fiscal policies must take into account the policies of other countries.

Despite this openness, foreign investment, and especially direct investment, in the United States remains, in relative terms, below that of many other nations. Available data indicate that direct investment plays a smaller

role in the U.S. economy than in other major economies. Indeed, with the exception of Japan, cumulative direct investment by the United States in other countries substantially exceeds foreigners' cumulative direct investment in the United States (Table 3-2).⁵ In 1989 the current-cost value of foreign direct investment assets in the United States was \$433.7 billion as compared to U.S. direct investment assets abroad of \$536.1 billion, for a U.S. net worth on direct investment assets of \$102.3 billion. In 1989 the total value of U.S. domestic wealth--excluding government owned assets--was \$16,017 billion and U.S. national net worth was \$15,602 billion. Foreign direct investment assets in the United States accounted for only 2.7 percent of U.S. domestic wealth and U.S. net worth on direct investment assets added 0.7 percent to national net worth. In 1989 the value of total foreign investment in the United States--direct and portfolio-- was \$1556 billion as compared to total U.S. investment assets abroad of \$1025.⁶ Total foreign assets in the United States equalled 9.7 percent of U.S. domestic wealth and the negative U.S. net worth on foreign investment equalled 3.4 percent from national net worth.

BENEFITS OF FOREIGN INVESTMENT

Foreign investment creates jobs in the short-term, but its lasting impact on the U.S. economy is through new investment and productivity growth. In the medium-term, U.S. employment and economic growth are mainly determined by monetary and tax policies, or by supply shocks, such as the rise in oil prices triggered by the events in the Middle East. During the 1980s, unemployment dropped as a result of credible non-inflationary monetary policies and improved incentives through tax cuts. Over time, U.S. economic growth, competitiveness, and standards of living depend on productivity growth, which in large part hinges on investment in new plant and equipment. In other words, higher investment is the key to higher productivity, higher wages, and higher standards of living. Foreign investment -- portfolio and direct -- raises investment and U.S. capital formation. Higher investment improves

Table 3-2
Foreign Direct Investment, 1989
(Holdings as Percent of Host-Country GDP)

	Foreign holdings in the United States	U.S. holdings in the Foreign Country
United Kingdom	2.3	7.5
Japan	1.3	0.7*
Netherlands	1.2	6.9
Canada	0.6	11.9
West Germany	0.5	1.8
Switzerland	0.4	10.8
France	0.3	1.4

*Data for 1988.

Sources: Department of Commerce and International Monetary Fund.

⁵ D. Julius and S. Thomsen, "Foreign-owned Firms, Trade, and Economic Integration," Tokyo Club Papers 2. London: Royal Institute of International Affairs, 1988. It should be noted that are significant measurement difficulties in comparing direct investment data across countries. However, the United States has one of the broadest definitions of direct investment among the G-7 nations, and hence the U.S. share cited above is probably biased up relative to the other estimates.

⁶ The aggregate international investment position data presented here are reported on the Federal Reserve Board's flow of funds basis so as to allow comparison of foreign investment to the Board's national wealth estimates. For a discussion of differences in the series -- which are in the classification of portfolio rather than direct investment -- see, Sarah A. Hooker and John F. Wilson, "A Reconciliation of Flow of Funds and Commerce Department Statistics on U.S. International Transactions and Foreign Investment Position," *Finance and Economics Discussion Series*, No. 84, August 1989, Federal Reserve Board, Washington, D.C.

productivity by increasing the amount of capital each worker has to use, and also speeds the rate at which new technologies are adopted, thus providing each worker with both more and better equipment.

Estimating the Benefits: A Macroeconomic Approach

The estimated contribution of foreign investment to the U.S. economy is indicated by the domestic saving and investment rates and the net capital inflows -- portfolio and direct -- into the United States during the 1980s. Prior to 1982, U.S. domestic saving was sufficient to fund domestic investment, but after 1982, it became increasingly inadequate due to an increase in investment demand. As a result, this gap was filled by net capital inflows, which rose dramatically, peaking at 22 percent of U.S. gross domestic investment in 1987 (Figure 3-4).

Without the availability of the net foreign capital inflow, a lower level investment would have been reflected in a significantly reduced level of GNP in the 1980s. Between 1982 and 1987, net capital inflows from abroad -- direct and portfolio -- added estimated roughly \$745 billion to gross private domestic investment in the United States. Applying the average rate of depreciation on the U.S. capital stock to these inflows suggests that they added about \$640 billion to the U.S. net capital stock by 1989.

During the postwar period, the elasticity of capital to output -- the percentage change in GNP arising from a one percent change in the net capital stock, or capital's contribution to economic growth, has averaged roughly one-third, which is also equal to its postwar share of GNP. If this postwar elasticity of one-third is applied to net foreign capital inflows' contribution to the U.S. capital stock, it

suggests that this increase in the capital stock raised GNP for 1989 by roughly \$210 billion (Table 3-3). The average rate of return to foreign investment in the United States in 1989 was 9.1 percent. Applying this rate of return to net capital inflows from abroad in the 1980s suggests that the United States paid \$62 billion to foreigners for a capital investment that produced \$210 billion in additional U.S. output for a possible net benefit of about \$150 billion in 1989.

These estimates provide only a very rough order of magnitude of the contribution of foreign capital and embody simplifying assumptions about macroeconomic relationships in the U.S. economy. The estimates presented above are rough approximations, and represent one way of modeling relationships in the U.S. economy. The estimates are based on long-run relationships and abstract from short-term macroeconomic fluctuations. Alternative models would provide additional estimates for gauging the sensitivity of the estimates and the validity of the assumptions made.

The most important of simplifying assumptions made for the set of long-run estimates are as follows:

- o The post-World War II average contribution of capital to GNP of approximately one third is representative for the 1980s.
- o Gross saving would not have risen to offset any reduction in net capital inflows from abroad.
- o The rate of return on incremental or net capital inflows was the same as the average rate of return on all foreign assets in the United States.
- o Alternative depreciation patterns would not change the results.

The most sensitive of these assumptions is probably the elasticity of output to capital. Although productivity

Table 3-3
Illustrative Estimates of Macroeconomic Impact of Net Foreign Capital Inflows, 1982-89
(Billions of dollars)

	1982	1983	1984	1985	1986	1987	1988	1989
Total net foreign investment ^a	1.0	33.5	90.9	114.4	135.8	154.6	119.2	96.8
Increase in U.S. net capital stock ^b	1.0	34.4	123.6	231.6	359.2	492.1	587.8	638.6
Increase in U.S. GNP, assuming:								
Capital elasticity of 1/6	0.2	5.7	20.6	38.6	59.9	82.0	98.0	106.4
Capital elasticity of 1/3	0.3	11.4	40.8	76.4	118.5	162.4	194.0	210.7
Increase in payments to foreigners ^c	0.1	3.3	12.0	22.5	34.8	47.7	57.0	61.9
Net benefit, assuming:								
Capital elasticity of 1/6	0.1	2.6	9.4	17.5	27.2	37.2	44.5	48.3
Capital elasticity of 1/3	0.2	8.2	29.5	55.4	85.8	117.6	140.5	152.6

^aPortfolio and direct investment.

^bDerived using: net foreign investment, 19-year average service life (U.S. average during the 1980s), straight line depreciation, and the implicit price deflator for gross domestic investment.

^cDerived using the average rate of return on the replacement cost stock of foreign investment in the United States (portfolio and direct), including capital gains and losses.

rebounded in the 1980s, measured productivity growth remains below the postwar average and capital productivity may well be below the 1989 -- and postwar -- share of capital in GNP of one third. If it is assumed that capital's productivity has been reduced by one half, and an elasticity of one-sixth is used rather than one third, the 1989 increase in GNP would be \$105 billion and the net benefit would be \$48 billion.

The second critical assumption is that gross saving would not have risen to offset any reduction in net foreign capital inflows. If, for example, foreign capital inflows had been curtailed, U.S. interest rates would have risen and U.S. saving might be expected to rise in response to the rise in interest rates so that the full brunt of a reduction in capital inflows need not have been borne by gross investment. Private saving, however, has not been very responsive to changes in real interest rates. Indeed, the household saving rate in the United States actually declined from an average 5.0 percent of GNP between 1950 and 1979 to an average 3.7 percent between 1980 and 1990.⁷

In addition to these direct benefits from foreign direct investment are a number of indirect benefits. Higher levels of investment also speed the rate of technological change by accelerating the rate of adoption of new technologies, especially those embodied in new capital stock. Moreover, because direct investment involves the investment of entrepreneurial, management, and technological, as well as financial resources, these skills are also transferred across countries. These transfers can no longer be viewed as one way--with a net transfer to other nations of U.S. expertise-- and today there is much that the U.S. can learn from other developed nations.

It is probably these indirect effects that explain why researchers who have examined the effect of changes in saving/investment rates on GNP have found increases that exceed capital's direct contribution (of roughly one third) to GNP.⁸ Indeed various studies have found nearly one-for-one changes in real GNP and net investment, which would produce considerably larger net benefit than the

\$48 to \$150 billion range illustrated above.

Another indirect benefit of foreign direct investment to the U.S. economy is the stability of this investment. It is less destabilizing than portfolio investment because by its nature it is a less liquid asset. Portfolio capital flows are extremely mobile, and in recent years, policy makers and financial market participants have observed sharp shifts in capital flows and domestic interest rates as foreign capital has moved into or out of the United States in response to changes in foreign and domestic interest rate differentials. Direct investment is by definition an investment by a foreign firm to obtain a lasting interest in a firm; and if a foreign firm were suddenly to dispose of its U.S. subsidiary, even in today's world of mergers and acquisitions, selling a company is significantly more difficult than selling a few shares in a company.

What then are the economic costs of direct investment? Presumably they arise mainly in response to a concern that the interests of foreign owners do not correspond with those of domestic owners or workers. Although discussed in detail in subsequent chapters of this report, in general, foreign-owned firms do not appear to have significantly different interests from U.S. citizens and U.S.-owned companies. For example, available evidence suggests that foreign-owned firms pay their workers significantly more than the average worker -- \$30,517 in compensation per worker versus an average of \$25,480 per worker for all U.S. workers in 1988.

Foreign-owned firms also appear to spend more on investment in plant and equipment per worker than the average U.S. firm -- \$11,184 per worker versus an all U.S. average of \$4,284 per worker in 1988. Although these differences are explained partly by differences in the mix of industries between FDIUS and all U.S. investment, inspection of individual industry data on compensation and plant and equipment spending per worker show smaller but persistently larger compensation and plant and equipment spending by U.S. affiliates than the U.S. average.

Perhaps the greatest area of concern is that foreign parents may cut back on R&D activities at U.S. affiliates, preferring to locate such activities, and the benefits that accrue to them, at the parents' headquarters abroad. Despite these concerns, the available evidence suggests that R&D spending by foreign-owned manufacturing firms appeared significantly higher than that by all U.S. manufacturing firms. In 1987, the most recent year for which data are available, U.S. manufacturing affiliates' R&D spending as a ratio to their value added was 7.6 percent, compared with 6.5 percent for all U.S. manufacturing firms. Much of this difference may be due to differences in the mix of manufacturing firms in the two groups.

Data on technology transfer also fails to suggest a net outflow from the United States through U.S. affiliates. As discussed in Chapter 4, U.S. affiliates' payments to their foreign parents for royalties and fees are substantially larger than receipts, indicating net imports of intangible

⁷Although other wealth and life cycle effects appear to have offset the effects of higher real rates of return in the 1980s; private saving in the postwar period has not been very responsive to variations in real rates of return.

⁸See for example, Paul Romer, "Crazy Explanations for the Productivity Slowdown," *NBER Macroeconomics Manual*, pp. 163-201, 1987.

A recent article, Benhabib and Jovanovic (1991), reexamines the high correlation between changes in capital and changes in output and suggests that the correlation may be due to other factors than technical change embodied in physical capital. See Jess Benhabib and Boyan Jovanovic, "Externalities and Growth Accounting," *American Economic Review*, pp. 82-113, March 1991.

Alternative explanations include that of potential interactions between the investment rate and the rate of technical change suggested by Boskin (1988), "Learning by-doing effects in investment may positively link the rate of investment and technical change. A society with a higher investment rate might not have a temporarily higher growth rate in its transition to a higher growth path, but actually might also increase the long-run rate of growth." See Michael J. Boskin, "Tax Policy and Economic Growth: Lessons From the 1980s," *Journal of Economic Perspectives*, pp. 71-98, Fall 1988.

property rights by U.S. affiliates from their foreign parents. In 1990, U.S. affiliates paid their foreign parents \$1.9 billion in royalties and license fees for the use of intangible property rights and assets, such as patents, techniques, formulas, designs, copyrights, and manufacturing rights. In contrast, foreign parents paid their U.S. affiliates \$0.3 billion for such rights, yielding net imports on royalties and fees of \$1.6 billion.

Although this list of concerns about the possible adverse economic effects of direct investment is far from exhaustive and ignores important noneconomic concerns such as national security and political influence, these data suggest that there is little quantitative evidence to support large economic costs from direct investment in the United States.

Indeed, the largest concern regarding direct invest-

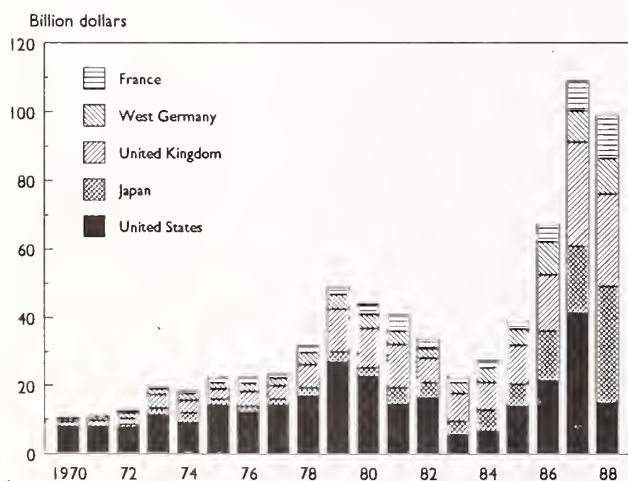
ment relates to constraints that would unduly inhibit direct investment. While the overall volume of capital flows is mainly determined by macroeconomic factors, regulations that constrain direct investment may lower its actual or perceived return and as a result lower the supply of capital to the United States since portfolio investment is not a perfect substitute for direct investment. Perhaps even more important, U.S. constraints on direct investment could well be countered by controls on U.S. investment abroad. The United States is the largest direct investor in the world and constraints on U.S. investment abroad could reduce the significant efficiencies, competitiveness, and protection U.S. firms reap from their locations abroad. Therefore, the optimum policy response is to continue U.S. multilateral efforts towards an open trade and investment regime worldwide.

TRENDS AND PATTERNS IN FOREIGN DIRECT INVESTMENT IN THE UNITED STATES

by John W. Rutter*

A review of the data on international direct investment during the 1980s shows a major surge in capital outflows from the G-5 -- the United States, the United Kingdom, West Germany, France, and Japan -- although the rate of capital outflows for U.S. direct investment abroad declined in the early 1980s (Figure 4.1). The United States became a major recipient of inward investment.¹ During this decade, foreign direct investment in the United States (FDIUS)² increased very rapidly, especially after 1985, although its growth rate fell sharply in 1990. The United Kingdom, Japan, the Netherlands, Canada, and West Germany were the major sources of FDIUS. The manufacturing industry was the major recipient, although other sectors also received large amounts of investment. The United States became the world's largest recipient of inward direct investment, while remaining the world's largest source of the stock of outward direct investment -- although its share of outward flows fell dramatically in the early 1980s. Nonetheless, the United States still has the lowest proportion of inward foreign direct investment (FDI) among industrial countries, except for Japan.

Figure 4-1
FDI Outflows by G-5 Countries
(Billions of dollars)



Source: DeAnne Julius, *Global Companies & Public Policy: The Growing Challenge of Foreign Direct Investment*. Council on Foreign Relations Press, New York, 1990.

More recently, FDIUS stock data for 1990 indicate that a shift in the global trend may be underway. The increase in FDIUS was only about \$30 billion in 1990, substantially less than the \$60 billion average for the previous three years, 1987-89. (Data on FDIUS capital flows for the first quarter of 1991 indicate that the slower growth in the FDIUS position is continuing.) Factors contributing to the slower growth in the FDIUS position include: (1) a weakening U.S. economy in 1990, which helped generate substantial operating losses and encouraged foreign companies to shift their investments elsewhere; (2) the increasing integration of the EC and the reunification of Germany, which required more capital investment in Europe; and (3) tighter monetary policies abroad and worldwide bank restructuring. Changes in interest rate differentials in 1990 encouraged some foreign companies to borrow more in the United States through their U.S. affiliates to finance their investments both in the United States and in other countries. (Such local borrowing in the United States is not included in the FDIUS position.)

European companies made only \$13 billion in direct investment in the United States in 1990, down sharply from an average of over \$40 billion in 1987-89. Japanese direct investment in the United States in 1990 was about \$16 billion, about the same as in 1987-89. Canada and Kuwait had net disinvestment in 1990. Some major Canadian companies in retail trade and real estate had incurred large operating losses, especially in 1990, due to the U.S. economic slowdown and severe financial problems in the U.S. real estate industry. Kuwait shifted the ownership of some of its investments from Kuwait to other countries in order to conduct business operations during the Gulf conflict.³

This chapter briefly reviews global foreign direct

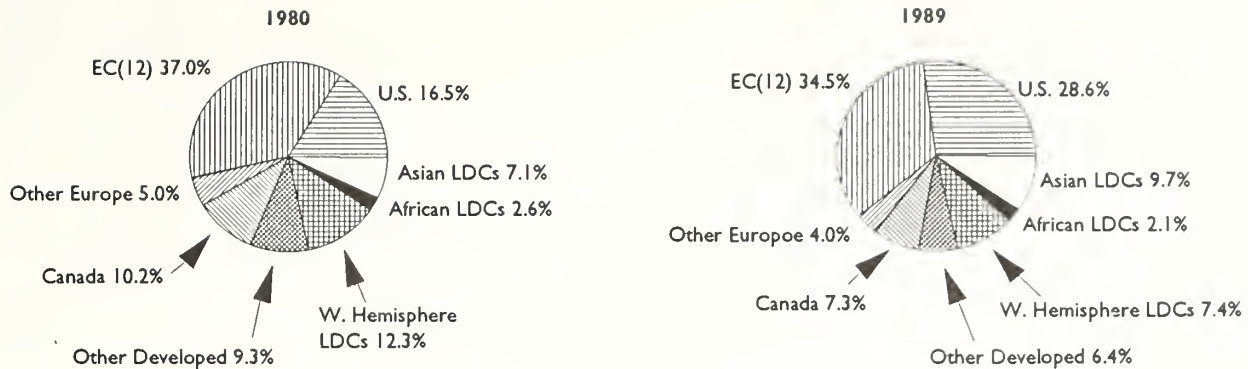
*International Economist in the Office of Trade and Investment Analysis, Trade Information and Analysis, International Trade Administration.

¹DeAnne Julius, *Global Companies and Public Policy: The Growing Challenge of Foreign Direct Investment* (New York: Council on Foreign Relations Press, 1990), pp. 20-35.

²Data discussed in this chapter are on a historical cost basis, rather than current cost or market value bases, to retain consistency throughout the report.

³Additional detail on FDIUS in 1990 are published in the *Survey of Current Business*, August 1991.

Figure 4-2
World Stock of Inward Direct Investment
By Major Host Country or Region
(Percentage Share)



Source: U.S. Department of Commerce, International Trade Administration,
Office of Trade and Investment Analysis.

investment trends and their importance in major countries. It then provides an overview of the FDIUS position.⁴ This overview includes changes in the composition of financing, shifts in countries investing in the United States, trends in industry composition, and changes in the balance of payments, which reflect FDIUS activity.

Global Trends in Foreign Direct Investment

The United States attracted an increasing share of international direct investment in the 1970s and 1980s. While the world stock of inward direct investment increased rapidly during the last two decades, from \$208 billion in 1973 to \$505 billion in 1980 and to \$1,403 billion in 1989, the FDIUS position rose proportionally faster, from \$21 billion to \$83 billion and to \$401 billion, respectively. As a percent of the world stock of inward direct investment, the U.S. share grew rapidly from 10.1 percent to 16.5 percent and to 28.6 percent over the same period (Figure 4-2).

The world growth rate of FDI slowed in the 1980s, but nonetheless remained higher than the growth rate of either world trade or world output. Excluding the United States, the world stock of inward direct investment increased at a 12.3 percent average annual rate between

1973 and 1980, but dropped to a 10.1 percent average rate from 1980-89. European countries, Canada, and Australia experienced major slowdowns in inward direct investment in the early 1980s, and a rapid growth of inward direct investment from 1985 to 1989. For the United States, the growth rate of FDI declined slightly in the early 1980s compared with the 1970s, and increased after 1985. In developing countries as a whole, FDI continued to increase at about the same rate in the 1980s as in the 1970s, with the faster growth of FDI in Asian and African developing countries offset by slower growth in highly leveraged Latin American countries.

Measurement Issues Affecting the Analysis of Global Trends

These comparisons across countries must take into account three major measurement problems in international direct investment. First, differences among countries in the concepts and methodologies used in collecting and computing foreign direct investment make data comparisons difficult, but the data do provide an approximation of the relative magnitudes over time. Second, exchange rate fluctuations create distortions over time in the international data, further complicating an analysis of global trends in FDI stocks. Third, use of historical book value accounting understates long-term investments made many years earlier. This valuation issue has been addressed by the Bureau of Economic Analysis, and estimates of market values, at least for U.S. data, are now available. These data were reported too late to be used in this first annual report. By and large, other countries have not addressed this valuation issue in their FDI data.

⁴The FDIUS position is defined as the cumulative net book value of foreign investors' equity in, and net outstanding loans to, U.S. business enterprises (U.S. affiliates) in which foreign investors hold 10 percent or more of the voting securities. Unless otherwise indicated, position data are classified by country of the first foreign parent in the ownership chain.

Table 4-1
Measures of the Proportion of FDIUS in the U.S. Economy
(Percentage Share)

FDIUS Position as a Proportion of Total U.S.	
Domestic Net Worth (1989)	4.5
Total Assets of U.S. Affiliates in Manufacturing as a Proportion of Total Assets of All U.S. Manufacturing Companies (1988)	14.7
Stockholder's Equity of U.S. Affiliates in Manufacturing as a Proportion of Stockholder's Equity of All U.S. Manufacturing Companies (1988)	12.9
Sales of U.S. Affiliates in Manufacturing as a Proportion of Sales of All U.S. Manufacturing Companies (1988)	12.2
Employment of Nonbank U.S. Affiliates as a Proportion of Total U.S. Private Nonbank Employment (1988)	4.1
Employment of U.S. Affiliates in Manufacturing as a Proportion of All U.S. Manufacturing Companies (1988)	8.5
Value Added of Nonbank U.S. Affiliates as a Proportion of U.S. Gross Domestic Product (1987)	4.3
Value Added of U.S. Affiliates in Manufacturing as a Proportion of All U.S. Manufacturing Companies (1987)	10.5

Sources: Calculated based on data from the Bureau of Economic Analysis and Bureau of the Census, U.S. Department of Commerce, and data on the net worth of the U.S. domestic economy (excluding households and nonprofit institutions) from the Federal Reserve Board's *Balance Sheets for the U.S. Economy*, October 1990.

Relative Importance of FDI in Major Host Countries

In terms of the size of the U.S. economy, FDIUS is relatively small whatever measure of scale is used. However, because the U.S. economy is so very large, the United States surpassed Canada in 1978 as the then single-largest host country of FDI, and, in 1988, held a direct investment position that was nearly three times the size of the next largest host country, the United Kingdom. The FDIUS position of \$401 billion in 1989 was the equivalent of 4.5 percent of the total U.S. domestic net worth. Similarly, U.S. affiliates' employment, assets, and value added reflect small participation in the total U.S. economy (Table 4.1).

Compared to other major industrial countries, except Japan, FDI remains a relatively small part of the U.S. economy. All the various measures of the macroeconomic importance of FDI in an economy -- none of which is superior for all purposes -- show lower proportions for the United States. Because the statistics necessary to develop the ratio of FDI positions as proportions of the net worth of domestic business are not generally available for countries other than the United States, other measures are used to compare the importance of FDI across countries (Table 4-2).

Table 4-2
Measures of the Proportion of FDI in the Economies of Major Industrial Countries
(Percentage Share)

	Assets	Sales	Value-added	Employment
Canada ^a	25(1987)	27(1987)	44(1986)	34(1986)
France ^b	26(1987)	27(1987)	25(1987)	22(1987)
Germany ^c	17(1986)	19(1986)	N.A.	20(1985)
Japan ^d	1(1984)	1(1984)	N.A.	0.4(1984)
United Kingdom ^e	14(1983)	20(1985)	19(1985)	14(1985)
United States ^f	15(1988)	12(1988)	4(1987)	4(1988)

N.A. - Not available.

^aAssets and sales are for all nonfinancial corporations; value added and employment are for manufacturing only.

^bData are for manufacturing and petroleum sectors only.

^cData are for all nonfinancial corporations.

^dData are for all industries.

^eAssets are for all large companies; sales, value added and employment for manufacturing companies only.

^fAssets and sales are for manufacturing companies only; value added and employment for all industries except banking.

Note: Years in parentheses are year for which data was collected.

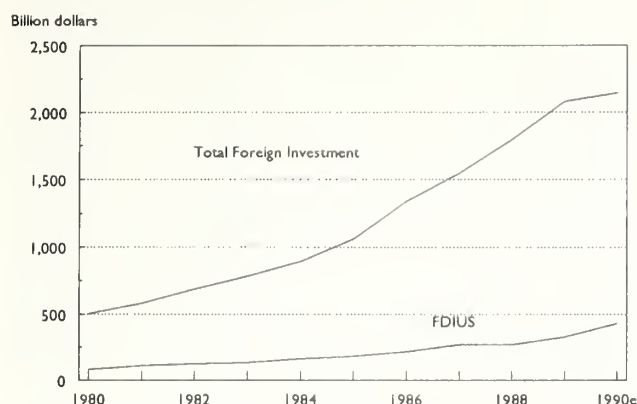
Sources: For Canada, assets and sales from *Corporations and Labor Unions Returns Act, Part I*, 1987; value added and employment are from Statistics Canada. For France, Ministry of Industry, *SESSI*, January 1988. For Germany, Japan and the United Kingdom, *Inward Investment and Foreign-owned Firms in the G-5*, by De Anne Julius and Stephen Thomsen, Royal Institute for International Affairs, 1989. For the United States, calculations based on data from the Bureau of Economic Analysis and the Bureau of the Census, U.S. Department of Commerce.

Of the major industrial countries, only the United States and France have experienced significant increases in their proportions of FDI in recent years. The U.S. affiliate share of total U.S. nonbank employment more than doubled from 1.6 percent in 1977 to 4.1 percent by 1988, and employment of affiliates of foreign firms in France increased from 18 percent of total employment in 1977 to 21 percent in 1985. The shares of employment by affiliates of foreign firms in Germany, Japan, and the United Kingdom declined slightly (about one percent in each country) during the same period.

Foreign Direct Investment in the United States

The FDIUS position increased at a relatively fast pace throughout the 1980s, but at a relatively lower rate than total foreign investment until 1990, when foreign portfolio investment increased at a relatively lower rate (Figure 4-3). From 1980 to 1985, the FDIUS position increased from \$83 billion to \$185 billion, or at an average annual rate of growth of 17 percent. From 1985 to 1989, the FDIUS position grew slightly faster at an average annual rate of growth of 21 percent to \$401 billion. After

Figure 4-3
Recent Trends in the FDIUS Position, 1980-90
(Billions of Dollars)



E - Estimated based on FDIUS capital inflows for 1990.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

1985, the rate of growth of foreign investment from European countries, Japan and Canada increased, while that from other developed countries (mainly Australia, New Zealand, and South Africa) and from developing countries slowed (Table 4-3).

This pattern changed in 1990 as total FDIUS capital inflows fell from \$72 billion in 1989 to \$26 billion in 1990, the smallest amount since 1985. This sharp decline in FDIUS in 1990 occurred in all three components of capital inflows -- intercompany debt, equity investment, and reinvested earnings. Intercompany debt inflows fell from \$26 billion in 1989 to only \$1 billion in 1990, reflecting a preference for holding U.S. debt rather than foreign debt, as real U.S. interest rates declined relative to interest rates abroad and the dollar continued to depreciate.

This shift in intercompany debt financing serves to highlight the influence of relative interest rate differentials on the behavior of foreign investors in financing FDIUS. Foreign direct investors may seek to borrow funds at the lowest interest rate available globally, or seek to invest liquid assets at the highest interest rate available worldwide, in addition to the more strategic motivations for making direct investments abroad.

Composition of Financing of FDIUS Position

Nearly 90 percent of the increase in FDIUS position since 1980 came from equity and intercompany flows of capital, while less than 4 percent came from reinvested earnings of existing foreign-owned U.S. affiliates (Figure 4-4). Another 6 percent of the increase came from valuation adjustments.⁵ Much of the large increase in equity and intercompany inflows went to finance acquisitions of U.S. companies in a broad range of industries, with the largest portion going for acquisitions in manufacturing.

Table 4-3
Recent Trends in the FDIUS Position,
Year end 1980, 1985, 1989
(Billion dollars or percentage)

	1980	1985	1989	Average Annual Rate of Growth	
				1980-85	1985-89
All Countries	33.0	184.6	400.8	17.3	21.4
Developed Countries	72.0	161.2	369.8	17.5	23.1
Canada	12.2	17.1	31.5	7.1	16.5
Europe	54.7	121.4	262.0	17.3	21.2
EC-12	47.3	107.4	234.8	17.8	21.6
Other Europe	7.4	14.0	27.2	13.7	18.0
Japan	4.7	19.3	69.7	32.5	37.8
Other Developed	0.4	3.3	6.5	50.7	18.5
Developing Countries	11.0	23.4	31.0	16.3	7.3
Latin America	9.7	16.8	20.3	11.7	4.9
Middle East	0.9	5.0	6.4	40.2	6.7
Other Africa, Asia and Pacific	0.5	1.7	4.3	27.7	26.1
Addendum:					
OPEC Countries	0.6	4.6	7.5	48.3	13.0

Note: Growth rates calculated from Appendix Table 4-2.

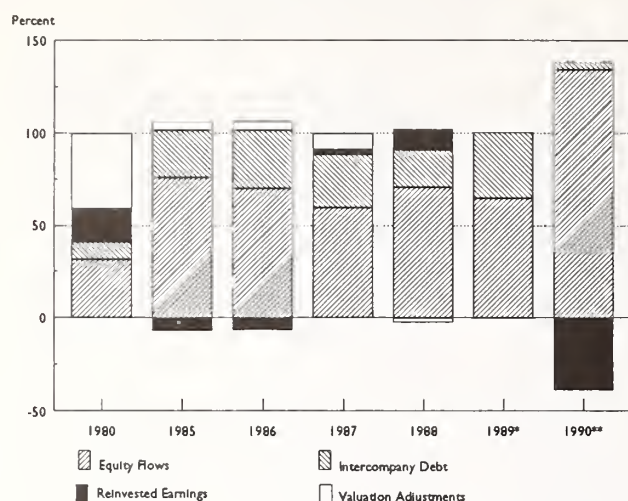
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Equity capital inflows also declined from \$47 billion in 1989 to \$35 billion in 1990, reflecting a slowdown in acquisitions and establishments of U.S. companies by foreign investors. Reinvested earnings fell from a negative \$0.1 billion in 1989 to a negative \$10 billion in 1990, as the U.S. economy slowed and losses were incurred by U.S. affiliates in the finance and banking sectors.

Earnings, and therefore reinvested earnings, of U.S. affiliates have been relatively small throughout the 1980s, possibly reflecting 1) high start-up costs for foreign investors either unfamiliar with U.S. markets or for the establishment of new businesses; 2) high interest expenses on large amounts of debt incurred by some foreign multinational corporations (MNCs) to acquire U.S. companies; 3) operating losses from those business ventures that have proven unsuccessful or are affected by slower U.S. economic growth; (4) specific problems in the banking, finance or real estate industries; and/or 5) inter-company pricing and cost allocation practices of foreign investors.

⁵Valuation adjustments represent accounting adjustments of the book value of assets, liabilities or owners' equity due to such items as major changes in the value of oil reserves, fire losses, or changes in the value of goodwill. They may also reflect statistical adjustments by the Bureau of Economic Analysis based on Benchmark Survey reports that more accurately reflect the value of foreign investors' equity in their U.S. affiliates.

Figure 4-4
Sources of Additions to FDIUS by Component
(Percentage Share)



Note: Reinvested earnings and valuation adjustments in 1989 were -0.1 percent and -0.4 percent, respectively. FDIUS capital flows for 1990 only; valuation adjustments not available.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

FDIUS by Major Source Country or Region

Developed Countries

Nearly two-thirds (\$262 billion) of the FDIUS position at year end 1989 was held by European countries, mostly EC countries (Figure 4-5). The United Kingdom led the EC in increasing its direct investment, and holds nearly one-third (\$119 billion) of total FDIUS, up from a 17 percent share in 1980 (Table 4-4). The rapid surge of FDIUS from the EC countries in the 1980s, especially after 1985, reflects not only the shifting of productive capacity in response to dollar depreciation, but also the perceived need of foreign MNCs to increase their overall size and

Table 4-4
Ten Largest Source Countries of FDIUS, by Rank
Order in 1989
(Percentage Share of Total Position)

	1989	1980
All countries	100.0	100.0
United Kingdom	29.7 (1)	17.0 (2)
Japan	17.4 (2)	5.7 (7)
Netherlands	15.1 (3)	23.1 (1)
Canada	7.9 (4)	14.6 (3)
West Germany	7.0 (5)	9.2 (4)
Switzerland	4.8 (6)	6.1 (6)
France	4.1 (7)	4.5 (8)
Netherlands Antilles	2.6 (8)	8.0 (5)
Australia	1.6 (9)	0.4 (12)
Belgium and Luxembourg	1.4 (10)	2.2 (9)
Other Countries	8.4	9.2

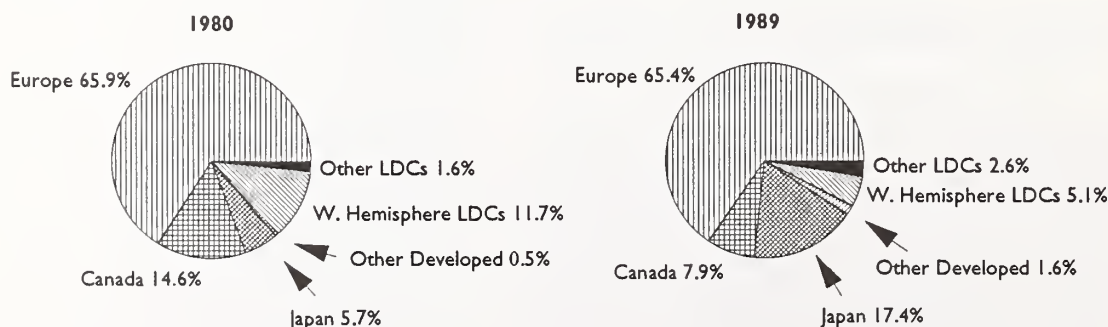
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

access to technology and markets in order to improve their ability to compete globally, as well as in the EC after 1992 when more complete integration takes place.

The unusually large and rapid increase in FDIUS by U.K. companies appears to be due to factors unique to the United Kingdom. These factors include the deregulation of financial markets or "Big Bang", which encouraged mergers and acquisitions by, and of, British companies; the expansion of U.S. investment banks in London which facilitated acquisitions of U.S. companies by British companies; and increased cash flow and profits of British companies beyond their domestic investment needs as a result of changes in U.K. tax and regulatory policies.⁶

⁶Robert N. McCauley and Dan P. Eldridge, "The British Invasion: Explaining the Strength of UK Acquisitions of US Firms in the Late 1980s," *International Capital Flows, Exchange Rate Determination and Persistent Current-Account Imbalances*, Bank for International Settlements, June 1990.

Figure 4-5
FDIUS
Position by Region or Major Source Country
(Percentage Share)



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Japanese direct investment increased at a higher average annual rate during the 1980s than any of the other major investing countries, especially after 1985, when it increased by about one-third each year. As a result, by 1988, Japan became the second-largest source country of FDIUS; its share of total FDIUS was 17 percent by the end of 1989. Most of the \$65 billion increase in Japanese direct investment during the 1980s went into three industries: wholesale trade (\$17 billion); manufacturing (\$16 billion); and real estate (\$14 billion).⁷ The large increase in wholesale trade primarily financed expansion in the operations of affiliates that import motor vehicles and parts and other durable goods into the United States. These imports are passed through wholesale trade affiliates on their way to retailers. This increase in wholesale trade also reflects the operations of Japanese companies involved in worldwide trading of raw materials, such as metals, minerals, and crude oil. Japanese direct investment in manufacturing is concentrated in electric and electronic equipment, primary and fabricated metals, and transportation equipment, reflecting competitive advantages in those industries. The special circumstances surrounding Japanese investment in real estate are discussed later when trends in FDIUS in real estate are examined.

Canada's direct investment position in the United States nearly doubled from 1985 to 1989, \$17 billion to \$32 billion. However, Canada's share of total FDIUS fell to 8 percent by year end 1989, a post World War II low, as FDIUS from most European countries, Japan and Australia rose faster.

Developing Countries

Latin America's direct investment in the United States increased at less than the average annual rate of total FDIUS throughout the 1980s, especially after 1985. The Netherlands Antilles and Panama account for the major share of FDIUS from Latin America. These two countries serve as intermediary locations for foreign investors in other countries, seeking anonymity and lower taxes. The Netherlands Antilles' position has not grown since 1984, when U.S. withholding taxes on interest payments to foreigners were eliminated.⁸

Nearly 90 percent of FDIUS from the Middle East is from just two countries, Kuwait and Saudi Arabia. Kuwait increased its FDIUS rapidly in the early 1980s, chiefly by acquiring a large U.S. petroleum services and construction company.

Three countries, Hong Kong, Singapore and Taiwan, hold nearly three-quarters of FDIUS from other developing countries in Africa, East Asia and the Pacific. A number of MNCs based in those countries have in recent years achieved the size necessary for international opera-

tions, aided by the assimilation of technology and managerial skills through licensing or through working with foreign MNCs from developed countries. Rising local wage rates, combined with currency appreciation against the U.S. dollar, also encouraged MNCs in Hong Kong, Singapore, South Korea and Taiwan to expand production abroad -- in the United States and not just in relatively low-wage developing nations. Wealthy individuals and MNCs from Hong Kong have an additional incentive to establish operations abroad because of the uncertainties surrounding the reversion in 1997 of Hong Kong to the People's Republic of China. Much of Hong Kong's direct investment in the United States has gone into finance and real estate, two areas in which investors from that country have significant expertise.

FDIUS by Country of Ultimate Beneficial Owner

Data by country of ultimate beneficial owner (UBO),⁹ rather than country of foreign parent, are needed in order to gain insight as to the ultimate source of control over FDIUS made through intermediary locations. A few countries, such as the Netherlands Antilles and Panama, show unusually large amounts of FDIUS, considering the size of their economies. In fact, these two countries and others are used as intermediary locations by investors in third countries, including the United States, to make investments in the United States. For reasons of control, taxes, and privacy, the legal organizational structures of both foreign- and U.S.-based MNCs and individual investors have become more complex over time.

Comparing the pattern of FDIUS between two sets of data--position by UBO and by first foreign parent--suggests the importance of taxes, privacy, and other factors in identifying the intermediary locations versus the UBOs. For 1987, the most recent FDIUS position data by country of UBO, major intermediary locations for FDIUS are the Netherlands (mainly because of an extensive network of tax treaties), Panama, the Netherlands Antilles, and the Cayman and British Virgin Islands. When classified by UBO versus by first foreign parent, the FDIUS positions for those countries decline. On the other hand, when classified by country of UBO, the positions of Canada, several major European countries (including France and Germany), the United States, several OPEC countries (including Kuwait and Saudi Arabia), Australia and Hong Kong increase, indicating that the investors in these countries are the ultimate owners of much of the

⁷The percentages are likely to be substantially modified as a result of the data link project. The data link will improve information about the activities of U.S. affiliates because they will no longer be classified only in the industry of major activity, but in the industry of actual activity of any separate establishments.

⁸The elimination of U.S. withholding taxes on interest payments to foreigners in 1984 largely nullified the unique advantage of the Netherlands Antilles which, because of a tax treaty with the United States that existed until 1987, offered an exemption from the withholding tax on interest payments.

⁹An ultimate beneficial owner (UBO) of a U.S. affiliate is that person, proceeding up the ownership chain beginning with and including the foreign parent, that is not owned more than 50 percent by another person. A U.S. UBO must be owned by a foreign investor in order to be classified as FDIUS. See appendix for further discussion of UBO and how UBO is determined.

investment made through intermediary locations. Less than one percent of the FDIUS position was held by U.S. UBOs through intermediary investments in foreign countries in 1987.

Trends in Industry Composition, 1980-89

In all industries, the acquisition of existing U.S. companies was the overwhelming method of investment rather than the establishment of new operations. The establishment of new factories has added to the U.S. capital stock and U.S. manufacturing productivity. Productivity improvements associated with foreign acquisitions of existing companies, while not so obvious, can be substantial since many of the same benefits may flow from takeovers as from greenfield investment, i.e., gains from specialization, increasing returns to scale, and more competition. In addition, the foreign firm may introduce new technologies or managerial skills, which are adopted by domestic firms, thus improving productivity in the long run.

By far the largest share (40 percent of the dollar increase) in FDIUS during the 1980s went into manufacturing. The FDIUS position in manufacturing rose nearly five-fold between 1980 and 1989, from \$33 billion in 1980 (39.8 percent of total FDIUS) to over \$160 billion (Table 4-5 and Figure 4-6). The pace of growth of FDIUS in manufacturing in the early 1980s was lower than in other industries, but, after 1985, it increased at a higher rate -- reflecting, in part, the effects of dollar depreciation which began in early 1985. Almost two-fifths of the rise in manufacturing FDIUS occurred in just two years, 1988 and 1989, coming mostly from the United Kingdom, Japan, the Netherlands, Germany, and France.

Within manufacturing, although FDIUS has grown

at different rates, the relative shares have not changed significantly from 1980 to 1989, although two sectors show particularly fast growth, "Other Manufacturing," particularly printing and publishing, instruments and related products, and transportation equipment (Figure 4-7). In 1989, the largest share of FDIUS continued to be held by chemicals manufacturing (29 percent), followed by food processing (14.9 percent), primary and fabricated metals (11.6 percent), electric and electronic equipment (10.2 percent) and nonelectrical machinery (6.4 percent).

FDIUS in wholesale and retail trade comprised the second largest major industry sector in 1989 (17.8 percent), its share declining slightly since 1980 (18.3 percent). The share of FDIUS in wholesale trade may be slightly overstated, to the extent that wholesale trade in motor vehicles includes manufacturing of motor vehicles because of the classification methodology used to allocate industry statistics. However, sales from the manufacturing of motor vehicles can be expected to become larger than the sales of vehicles imported for resale by certain Japanese-owned U.S. affiliates now classified in wholesale trade as the U.S. affiliates become established, and these affiliates will be reclassified out of wholesale trade and into manufacturing. When this happens, FDIUS in transportation equipment manufacturing will rise and in wholesale trade of motor vehicles will fall. This problem will be resolved with the completion of the data link project.

Real estate was the third largest industry sector at year end 1989, with an 8.9 percent share (\$35.9 billion), down from its peak share of 10.8 percent in 1984. It should be noted that the FDIUS position in U.S. real estate, as well as in any other industry, represents only foreign investors' own equity in and net outstanding loans to U.S. affiliates classified in that industry, and does not include domestic U.S. borrowing. Moreover, real estate held for personal use is excluded from FDIUS by definition. The FDIUS position in real estate represents the investment of foreign parents in U.S. affiliates whose major activity is real estate, and significant amounts of U.S. real estate are held by affiliates classified in other industries.¹⁰ The FDIUS position of \$35.9 billion does not represent the value of total assets of U.S. affiliates in real estate (as is true in other industries), which is much larger because of the high debt leverage typical in the real estate industry.

Over 80 percent of FDIUS in real estate is held by owners from just five countries, Japan, the United Kingdom, Canada, the Netherlands and the Netherlands Antilles. Over half of the increase of FDIUS in real estate occurred after 1985, especially in a surge of investment from Japan from 1987-89. A combination of economic factors encouraged Japanese direct investment in U.S. real estate

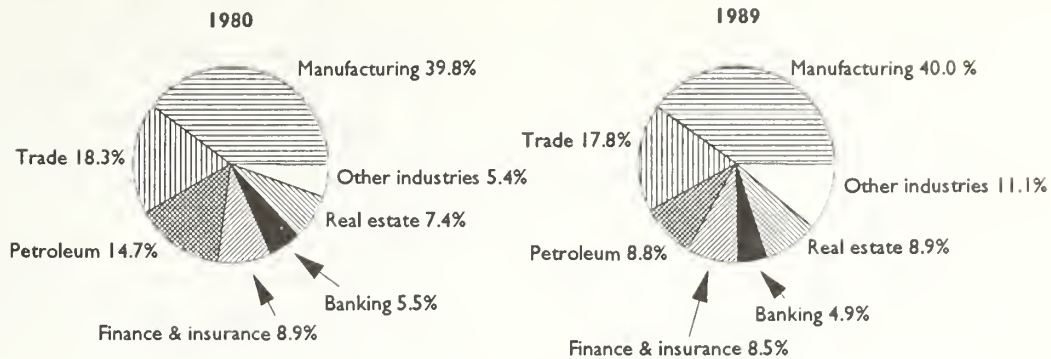
Table 4-5
Recent Trends in the FDIUS Position By Industry,
Year end 1980, 1985, 1989
(Billion Dollars or Percentage)

	1980	1985	1989	Average Annual Rate of Growth	
				1980-85	1985-89
All Industries	83.0	184.6	400.8	17.3%	21.4%
Petroleum	12.2	28.3	35.1	18.3	5.5
Manufacturing	33.0	59.6	160.2	12.6	28.0
Trade	15.2	35.9	71.4	18.8	18.8
Banking	4.6	11.4	19.6	19.9	14.5
Finance & Insurance	7.4	16.1	34.1	16.8	20.6
Real Estate	6.1	19.4	35.9	26.0	16.6
Other Industries	4.5	14.1	44.6	25.7	33.4

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

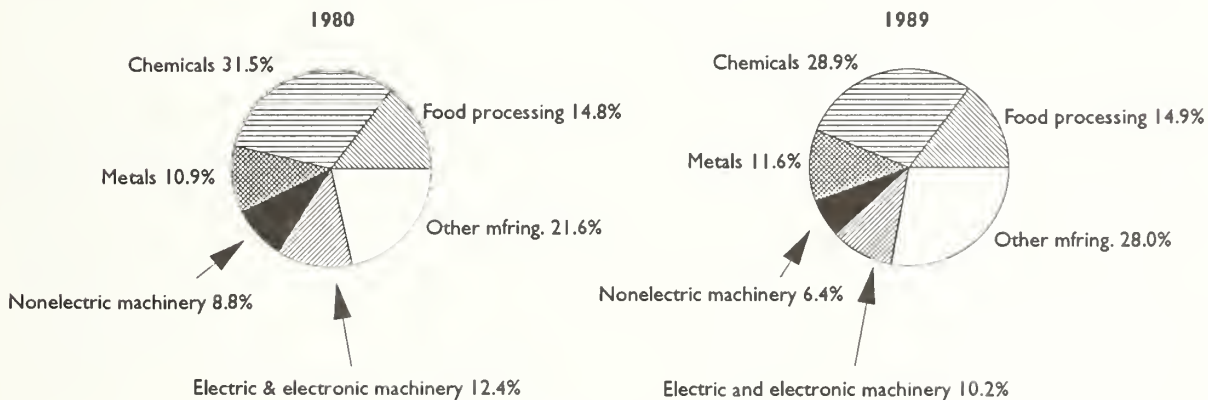
¹⁰In addition, foreign ownership of U.S. real estate may be understated to the extent that foreign investors have participated in such investments as limited partnerships, which may not be aware of the reporting requirements to the U.S. Government.

Figure 4-6
Trends in Industry Composition of FDIUS, 1980 and 1989
(Percentage Share)



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Figure 4-7
Industry Composition of FDIUS in Manufacturing, 1980 and 1989
(Percentage Share)



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

during those years, including 1) large dollar depreciation which for Japanese investors raised the value of yen-denominated equity in dollar terms and lowered the cost of dollar-denominated debt in yen terms; 2) a lower cost of capital for Japanese investors due to relatively lower interest rates, a surging Japanese stock market and liberal bank lending practices in Japan; and 3) the relatively small available supply and much higher price of Japanese real estate compared with U.S. real estate. Direct investment flows from Japan in U.S. real estate slowed substantially in 1990, reflecting a rise in the cost of capital and falling equity and real estate prices in Japan. However, to the extent that a shift to U.S. sources of financing may have occurred, additions in Japanese-owned U.S. real estate are not reflected in the balance of payments data. FDIUS in real estate from other countries increased more gradually

starting in the late 1970s and early 1980s, but has also subsided recently.

Finance and insurance accounted for 8.5 percent of the total FDIUS position in 1989, down slightly from 8.9 percent in 1980. FDIUS from Japan, the Netherlands, Switzerland, Canada and the United Kingdom--where major financial markets are located--more than accounted for investment in these sectors. FDIUS in finance from Australia and the United Kingdom Islands-Caribbean has been negative since 1987, and could reflect borrowing in U.S. capital markets.

The FDIUS position in banking increased steadily during the 1980s, but not as fast as in other major industries. The share of FDIUS in banking declined from 5.5 percent in 1980 to 4.9 percent in 1989. Portfolio investment and lending and borrowing activities have been more

prevalent than direct investment (permanent debt and equity investment) in U.S. banks. As of June 1990, foreign-owned or controlled U.S. banks held over 20 percent of the assets of all U.S. banks, over 17 percent of all loans and nearly 14 percent of all deposits.¹¹

The amount of FDIUS in petroleum leveled off after 1987, contributing to a share decline to 8.8 percent in 1989 from 14.7 percent in 1980. There were fewer major acquisitions in petroleum than in most other industries during the 1980s. The increased world supply and slower growth of world demand for petroleum in the 1980s have generally depressed oil prices, leading to a relatively lower rate of growth of both foreign and domestic investment in the U.S. petroleum industry.

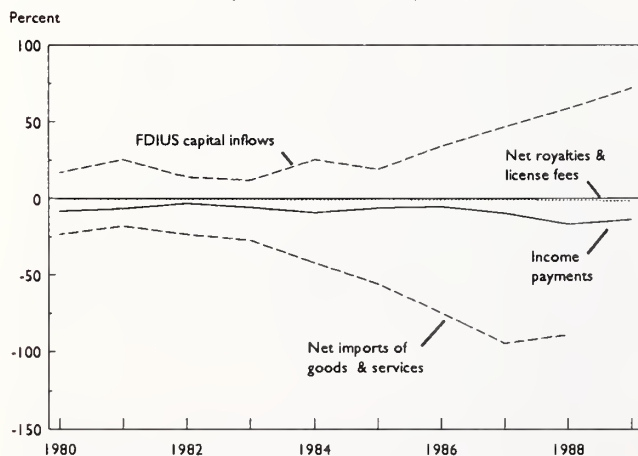
In "Other Industries," FDIUS increased rapidly to 11.1 percent of the total by year end 1989. Nearly all of the growth was in services industries, chiefly business services and hotels, and water and air transportation.

Current Account Flows

While the foreign direct investment capital flows are reported in the capital account of the U.S. balance of payments, the international operating transactions of the U.S. affiliates in which these investments are made are reported in the current account. These operating transactions include payments and receipts for goods, services (including licenses, royalties, and fees), and international income payments. The timing and level of the FDIUS flows reported in the capital account do not significantly correspond to the timing and level of the overall business transactions of U.S. affiliates in which those investments are made.

¹¹Federal Reserve Board, "Selected Assets and Liabilities of U.S. Offices of Foreign Banks," September 1990.

Figure 4-8
Balance of Payments Impact of FDIUS
(Billion Dollars)



Note: Net imports of goods and services not yet available for 1989.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

The linkage between the timing and level of international capital and current account transactions for U.S. affiliates is therefore weak. On the capital side, they obviously exclude investment in U.S. affiliates by U.S. partners. Moreover, investments made by foreign owners from borrowing in the United States are not included. The timing of the operating transactions recorded in the current account is affected by whether foreign investments were for acquisitions of already existing facilities (the most common form) or for newly constructed "greenfield" facilities; that is, how long it takes U.S. affiliates to begin operations.

The timing and level of these international operating transactions are also a function of the industry in which the U.S. affiliate is operating (for example, wholesaling versus manufacturing) and whether the U.S. affiliate is shrinking or growing. Also determining these transactions are such factors as prices and exchange rates.

Recognizing the distinction between transactions recorded in the capital and current accounts, the data indicate that the various types of international transactions reported in the current account have been rising over the long term. The following briefly describes the current account transactions attributed to U.S. affiliates.

U.S. Affiliate Trade in Goods

By far the largest entries, as well as net balance, in the current account for U.S. affiliates appears in the trade in goods. Merchandise trade conducted by U.S. affiliates is much larger than their trade in services. For example, net merchandise imports (exports minus imports) by U.S. affiliates were \$90 billion in 1988 (the latest year available), compared with income payments of \$14 billion, and \$0.3 billion in overall net services payments (including net royalty and license fee payments of \$1.0 billion) (Figure 4-8).

U.S. Affiliate Merchandise Imports

U.S. affiliate merchandise imports were \$150 billion (over one-third of total U.S. imports) in 1988 and are highly concentrated by country and by industry.

- o In 1988 nearly three quarters of total U.S. affiliate imports were by wholesale trade affiliates (\$110 billion), of which Japanese-owned wholesale trade affiliates accounted for nearly two-thirds (\$71 billion).
- o From 1980 to 1988, imports of motor vehicles and equipment by Japanese-owned wholesale trade affiliates increased from \$12 billion to \$33 billion, and wholesale trade imports of computers, electric and electronic equipment, and other durable goods increased from \$6 billion to \$29 billion.

- o European-owned wholesale trade affiliates imported another one-quarter of total imports by wholesale trade affiliates, mostly motor vehicles and equipment and nondurable goods.

About one-fifth of total U.S. affiliate imports in 1988 were by manufacturing affiliates, of which European-owned affiliates accounted for three-fifths and Japanese-owned affiliates about one-fifth. Most of the imports by European-owned manufacturing affiliates were in the chemicals, electric and electronic equipment, and nonelectrical machinery industries. Japanese-owned affiliates in electric and electronic equipment and in motor vehicles and equipment accounted for two-thirds of the total imports by Japanese-owned manufacturing affiliates.

U.S. Affiliate Merchandise Exports

U.S. affiliate merchandise exports were \$60 billion in 1988, about one-fifth of total U.S. exports. In contrast to U.S. affiliate imports, U.S. affiliate exports grew slowly from 1980 to 1988. From \$52 billion in 1980, U.S. affiliate exports peaked at \$64 billion in 1981, generally declined to \$48 billion by 1987, and then rose to \$60 billion in 1988. Most of U.S. affiliates' exports (\$60 billion) in 1988 was shipped by Japanese-owned affiliates (\$24.5 billion) and European-owned affiliates (\$23.6 billion). Canadian-owned affiliates exported another \$6 billion. The composition of exports from European-owned affiliates shifted between 1980 and 1988. The proportion of manufacturing exports increased from 27 percent in 1980 to 53 percent in 1988, and food and raw materials exports declined from 52 percent in 1980 to 31 percent in 1988. In contrast, during the same period, exports from Japanese-owned affiliates showed a less dramatic change: manufacturing exports rose from 4 percent in 1980 to 7 percent in 1988, while raw materials exports fell from 78 percent in 1980 to 52 percent in 1988.

U.S. Affiliate Services Transactions

In 1989, U.S. affiliates' total trade in services -- licenses, royalties, and fees, plus "other" services -- were in deficit, with receipts of \$3.9 billion and payments of \$4.6 billion.

Royalty and license fees paid by U.S. affiliates include those for the use of technology, copyrights, trademarks, franchises or other intangible property rights needed to produce or market the purchaser's products. Net royalty

and license fee payments increased fourfold during the 1980s, but were still relatively small at \$1.4 billion in 1989. Payments of royalties and license fees are much larger than receipts, reflecting the much higher level of imports of intangible property rights used by U.S. affiliates to produce and market their products and services than the intangible property rights transferred to foreign firms.

In contrast, U.S. affiliates' trade in "other" services were in surplus in 1989, with receipts of \$3.5 billion and payments of \$2.9 billion. Among "other" services components, for example, affiliates' receipts for warranty work on imported motor vehicles, are much larger than payments for services rendered by foreign parents and charged to U.S. affiliates.

U.S. Affiliate Income Payments

U.S. affiliate income payments to their foreign parents are reflected in the balance of payments. Income payments are the foreign parent company's return on its investment as measured by its share of net income of its U.S. affiliates after U.S. taxes plus net interest payments to the parent. Income payments increased more slowly than the FDIUS position, from \$9 billion in 1980 to \$14 billion in 1989. The relatively slow growth of income payments is probably due to the same factors described previously for small or negative reinvested earnings, i.e., high start-up costs, high interest expenses reflecting large amounts of debt, and operating losses from some unsuccessful business strategies.

FDIUS income payments are also relatively small compared with other investment income payments in 1989, such as payments on foreign portfolio investment (\$78 billion), U.S. government payments (\$36 billion), or income receipts on U.S. direct investment abroad (\$54 billion). Income payments are very volatile, with profits shifting to losses and vice versa from year to year in some countries and industry sectors. In 1989, European-owned affiliates recorded over four-fifths (\$11.8 billion) of total income payments. British-, Dutch- and Swiss-owned affiliates generated the largest income payments, primarily from manufacturing, petroleum, wholesale and retail trade, insurance and banking operations. Japanese-owned affiliates generated \$1.3 billion of income, mostly from banking, wholesale trade and real estate. Japanese-owned manufacturing affiliates have had negative income for several years, reflecting in part start-up costs associated with new motor vehicle and other manufacturing facilities, which have more than offset profits from other older manufacturing operations.

ROLE OF FOREIGN-OWNED U.S. AFFILIATES IN THE U.S. ECONOMY, 1977-88

by Gerald R. Moody*

The highly visible growth of foreign direct investment in the 1980s stimulated considerable public interest in its role in the U.S. economy. This chapter examines the contributions of foreign-owned affiliates to U.S. economic growth, employment, and merchandise trade; their importance in individual U.S. industries and states; and their principal foreign national ownership.

The major points that emerge from examining the role of U.S. foreign-owned affiliates are that (1) overall, they account for a still small share of the U.S. economy, even though their share doubled between the late 1970s and early 1980s, (2) they play a considerably more important role in the output, employment, and foreign trade of several industries' than others, and (3) during 1984-87, the share of the overall U.S. trade deficit represented by non-manufacturing (primarily wholesaling) U.S. affiliates was relatively large and growing compared to that represented by all other U.S. businesses. (Hereinafter the U.S. foreign affiliates owned by foreign companies will mainly be referred to simply as the "U.S. affiliates".)

To state the obvious -- U.S. affiliates located in the United States are, by definition, a part of U.S. productive assets. Their output of goods and services are included in the U.S. gross domestic product, their workers are included in total U.S. employment, their exports and imports of goods and services are included in U.S. aggregate foreign trade, and their research and development expenditures are part of total U.S. technology investment and the results they yield are part of U.S. technology progress.

The timing of a U.S. affiliate's contribution to the U.S. economy is considerably affected by the way that business is created by the foreign owner, just as in the case of businesses created by U.S. owners. Acquisition of an existing business (by buy-out), rather than by construction of a new business facility (a "green-field" facility), results in an immediate substitutional shift in the U.S.-owned versus foreign-owned share of U.S. economic activity. The shift in share of economic activity takes longer if a new facility is constructed.

Creation of U.S. affiliate businesses through both acquisition of existing businesses and through creation of new facilities has been on a strong upward trend since the

mid-1980s. Acquisition of existing business is by far the dominant basis for foreign owners to obtain U.S. businesses -- in 1989, reaching \$55.8 billion and accounting for 86 percent of the total outlays for U.S. affiliates by foreigners.

Contribution to the U.S. Economy

In the 1980s, U.S. affiliates increased their participation in the U.S. economy in terms of several important indicators. Between 1977 and 1988, U.S. affiliates at least nearly doubled their share of total U.S. private output, sales, employment, research and development expenditures, and imports. The exception to these indicators is the actual decline in their share of U.S. merchandise exports since the early 1980s (Table 5-1).

Table 5-1
Shares of Key U.S. Economic Indicators
Accounted for by U.S. Affiliates of Foreign
Companies
(In percent)

	1977	1980	1988
All nonbank private affiliates:			
Gross product.....	2.3	3.3	4.1 ^a
Employment.....	1.8	2.7	4.1
Manufacturing affiliates:			
Assets.....	6.3	8.3	14.7
Sales.....	5.0	7.1	12.2
Gross product.....	5.0	7.9	10.5 ^a
R&D expenditures ^b	4.1	5.7	10.9
Total U.S. merchandise trade:			
Exports.....	20.2	26.8	18.9
Imports.....	29.1	31.5	35.0

^a1987 data.

^bExcludes petroleum refining.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of the Census; and National Science Foundation.

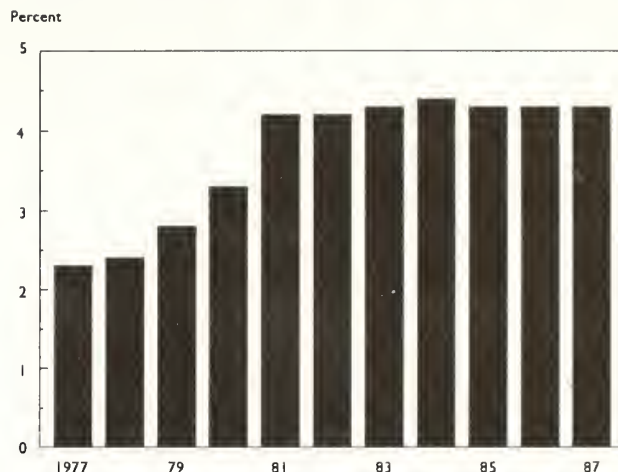
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Gross Product of Affiliates¹

Between 1977 and 1987, U.S. affiliates made a small but important contribution to the growth in U.S. domestic output, with their share of the total gross product of nonbank U.S. businesses almost doubling from 1977 to 1981 and then holding at slightly over four percent throughout the remainder of the 1980s (Figure 5-1). From 1977 to 1981, affiliates' gross product grew at a very rapid 29.4 percent average annual rate, followed by only 7.4 percent from 1981 to 1987. In the first four years, the growth rate of affiliates' gross product exceeded that of all U.S. business by 18.3 percent, but affiliates and all U.S. business exhibited nearly identical growth from 1981 to 1987.

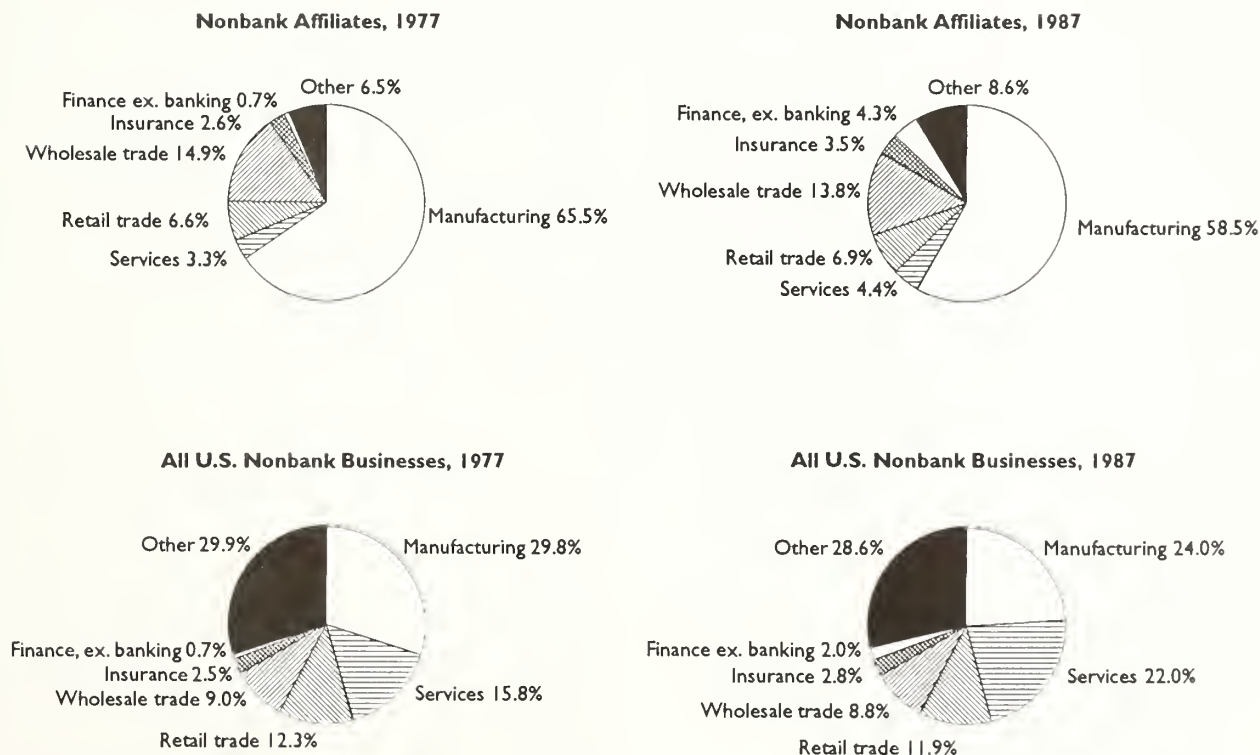
U.S. affiliates' contribution to U.S. output in 1987 (the latest data year) was mainly concentrated in manufac-

Figure 5-1
U.S. Affiliates Support Over 4 Percent of U.S. Nonbank Gross Product in the 1980s



Source: Bureau of Economic Analysis.

Figure 5-2
Changes in Composition of Gross Product Of U.S. Affiliates and All U.S. Nonbank Business, 1977-87



Source: Bureau of Economic Analysis.

turing and wholesaling, which accounted for 58 and 14 percent, respectively, of the U.S. affiliates' total gross product (Figure 5-2). U.S. affiliate output is far more concentrated in these two sectors than is all U.S. business output -- for which the total business shares in the two sectors in 1987 were 24 and 9 percent, respectively.

U.S. affiliates also are a much more important apparent contributor to the growth of output in manufacturing than in other sectors, such as wholesaling, finance, and services. Their share of the gross product of all U.S. manufacturing rose from 5.0 to 10.5 percent between 1977 and 1987.

Compared with all nonbank business in the same sector and in current dollars, U.S. affiliates' overall gross product grew more strongly. The U.S. affiliates' gross product in manufacturing rose at a 14.4 percent rate (versus 6.2 percent for the whole manufacturing sector), and in all other business sectors the affiliates' gross product rose at an average 17.9 percent rate (versus 9.4 percent for that group as a whole).

In real terms, the gross product of U.S. affiliates in manufacturing rose nearly four times as fast as all manufacturing establishments between 1980 and 1987 (96 percent versus 24 percent). (Lack of appropriate price deflators for affiliates prevents a similar comparison for U.S. affiliates in nonmanufacturing sectors.)

The largest contributors to the gross product of U.S. affiliates were those owned by parents in the United

Kingdom and Canada, accounting for 21 and 18 percent, respectively, of the total affiliates' gross product in 1987. While U.K.-owned U.S. affiliates have long been, and continue to be, the largest U.S. affiliates in terms of gross product, Japanese-owned affiliates are the fastest growing group (Figure 5-3).² Japanese-owned U.S. affiliates increased their share of the group's total gross product from 7 to 11 percent between 1977 and 1987. In contrast, the share of Netherlands-owned U.S. affiliates dropped sharply from 18 to 10 percent. Japanese-owned U.S. affiliates increased their gross product (in current dollars) at about twice the pace averaged by all other U.S. affiliates between 1977 and 1987 -- by nearly 600 percent compared with about 300 percent.

Japanese-owned affiliates are far more important in terms of total sales than gross product, accounting in 1987 for 25 percent of the U.S. affiliates' total sales. The Japanese-owned affiliates' larger share in sales than gross product reflects their large share in wholesaling -- 19 percent compared to 8 percent for all U.S. affiliates in 1988. Typically, the gross product to sales ratio is much lower in wholesaling than, for example, in manufacturing.

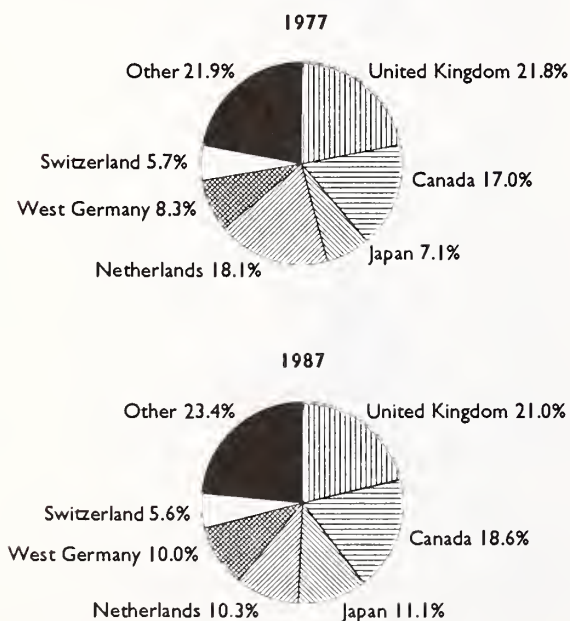
Shifts in Import Content of U.S. Affiliates' Output

In recent years considerable public attention has been raised about the rising use of imported inputs by U.S. industry in their output of goods and services. Attention has been particularly directed to the operations of U.S. affiliates because of their direct links to foreign parent corporations. In an accounting sense, the contribution that U.S. affiliates (or other U.S. businesses) make to U.S. economic growth is not determined by the share of their total purchased inputs of goods and services that are imported. The gross product (or value added) originating in any firm is found by subtracting all inputs -- imported or domestic -- from the firm's sales. For example, the gross product originating in a business wholesaling cars (whether foreign or domestically owned) is the value of the domestic resources used by that business -- wages, profits, and rent, and excluding intermediate inputs -- regardless of whether the business sells cars produced here or abroad.

On average, across all sectors, the great bulk of purchased goods inputs used by U.S. affiliates appears to have been U.S.-produced. In 1987, imports accounted for about 24 percent of the total goods inputs purchased by nonbank U.S. affiliates, higher than the 19-20 percent shares in the early 1980s, but lower than the 27-28 percent shares in the late 1970s (Figure 5-4).

The extent that U.S. affiliates depend on imported inputs varies very widely across industries and country of affiliate ownership -- with those in manufacturing much

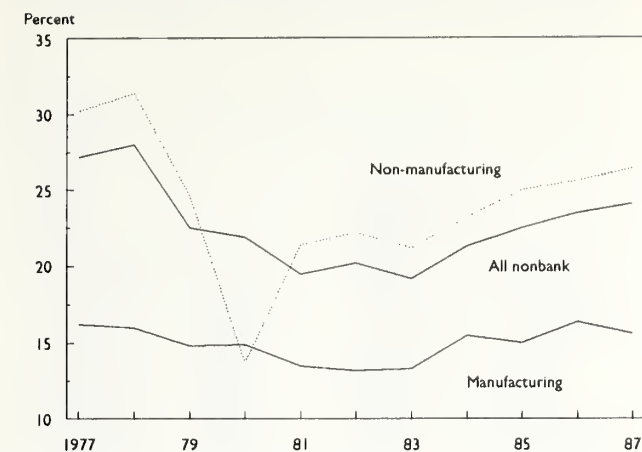
Figure 5-3
Changes in National Ownership Shares of
U.S. Affiliates, 1977-1987



Source: Bureau of Economic Analysis.

²Gross product, as well as the subsequently discussed employment, by country of U.S. affiliate ownership is based on the country of "ultimate beneficial owner". See the glossary of terms in this report's appendix.

Figure 5-4
Import Share of Total U.S. Affiliates' Input Purchases



Source: Bureau of Economic Analysis.

less dependent on imports than all other affiliates, on average. In 1987, the import share of U.S. affiliates' total merchandise input purchases averaged 16 percent for those in manufacturing versus 41 percent in wholesaling. Moreover, the ratio of imported inputs to total sales value averaged 11 percent for U.S. affiliates in manufacturing and 19 percent in all industries.

The higher imported-input to sales ratio for "all industries" reflects the substantial share of total affiliate sales in the wholesale industry (36.3 percent in 1988), which often merely distributes foreign-made products. The imported-input dependence of affiliates in wholesaling also varies widely, depending on the product sold. For example, U.S. affiliates in wholesaling of motor vehicles, equipment and parts, depended on imports for 65 percent of total input purchases in 1987.

The degree of dependence on imports also varies widely by country of U.S. affiliate ownership. Japanese-owned U.S. affiliates, particularly those in manufacturing, have averaged a much greater dependence on imported input purchases, as a ratio to total input purchases and to sales, than most other U.S. affiliates. In 1987, the imported share of input purchases by Japanese-owned affiliates was 43 percent versus 24 percent for all U.S. affiliates in all industries, and for those in manufacturing was 37 and 16 percent, respectively. Moreover, Japanese-owned U.S. affiliates substantially increased their dependence on imported inputs -- rising from 33 to 43 percent between 1977 and 1987 -- while non-Japanese-owned U.S. affiliates showed virtually no growth in their dependence on imported inputs between 1977 and 1987. The increased dependence of these Japanese-owned firms on imported inputs is also reflected in the drop in the ratio of their U.S.-content to sales value -- the ratio for those in manufacturing dropping from 88 to 74 percent between 1977 and 1987, and in wholesaling from 64 to 55 percent.

Contributing to the larger dependence of Japanese-owned than other affiliates on imported goods inputs has been their far higher share of sales in wholesaling than the share of all other U.S. affiliates (67 versus 34 percent in 1987), and probably the large share of their sales in wholesaling comprising their own Japanese parents' products, such as automobiles and parts.

Another significant factor explaining the differences between Japanese and other affiliates is the fact that Japanese affiliates are on average much newer to the American market than are affiliates of other nations. Generally, U.S. affiliates increasingly "go native" in purchasing and employment practices as they mature, learn about, and adapt to the American market. That same pattern tended to occur in the behaviour of affiliates of U.S. multinationals in Europe.³

Across individual manufacturing industries, the degree of dependence on imported inputs varied widely between Japanese-owned and all other U.S. affiliates. For example, the import content of sales by Japanese-owned affiliates in food processing, chemicals and metals industries was 10 percent or less -- not substantially different from the average share for all U.S. affiliates. In contrast, the shares for Japanese-owned affiliates in machinery and other manufacturing industries were substantially higher than for all U.S. affiliates, and were particularly higher in electronics and transportation products, including automobile manufacturing.

Employment Supported by U.S. Affiliates

Nonbank U.S. affiliates increased their employment from 1.2 to 3.7 million workers between 1977 and 1988. Their employment tripled while employment by all other U.S. private business employment rose by slightly over one-fourth, and thus accounted for a rapidly rising share of the U.S. total -- their share rising from 1.8 to 4.1 percent of the total (Figure 5-5). As pointed out earlier, a large rise in acquisitions is a major contributor to that share rise.

Manufacturing accounts for nearly one-half of total U.S. affiliate employment, accounting in 1988 for 1.7 out of the total 3.7 million workers employed by U.S. affiliates. Retailing plus wholesaling accounted for over one-fourth of the total U.S. affiliate employment. Within manufacturing, U.S. affiliate employment was widely distributed, with the largest shares in chemicals, and electric and electronic products. Notwithstanding the advent and notoriety of the Japanese auto manufacturing "transplant" facilities in the United States, in 1988 U.S. affiliates in the motor vehicle manufacturing industry employed 64,000 workers -- only 2 percent of total U.S. affiliate employment and 6 percent of total Japanese-owned U.S. affiliate employment.

³Page 261, *Economic Report of the President, Transmitted to the Congress, February 1991, together with The Annual Report of the Council of Economic Advisers* (Washington: U.S. Government Printing Office, 1991).

Between 1980 and 1988, U.S. affiliate employment in almost all individual goods and services industries significantly rose as a share of total U.S. employment in those industries. The largest share growth during 1980-88, as well as the largest share in 1988, was in the chemicals industry, with the U.S. affiliate share rising from 14 to 26 percent (Figure 5-6).

The largest number of U.S. jobs supported by U.S. nonbank affiliates are those in Canadian- and United Kingdom-owned facilities, in 1988 accounting for 19 and 20 percent respectively of total employment by U.S. affiliates. Other important U.S. affiliate employers in-

cluded those with owners in Japan and Germany. The highest proportionate rise in number of jobs supported by affiliates between 1980 and 1988 were those with Japanese owners, their share of the total doubling from 5.7 to 10.9 percent.

In broad terms, Japanese-owned U.S. nonbank affiliates grew in relative importance mainly in sectors other than manufacturing and wholesaling, their principal sectors. The largest employment share gains of Japanese-owned U.S. affiliates were in finance, business services, and construction. Within manufacturing, a number of industries' shares actually decreased. Nevertheless, major share increases occurred in motor vehicles and parts, and in rubber products, including tires.

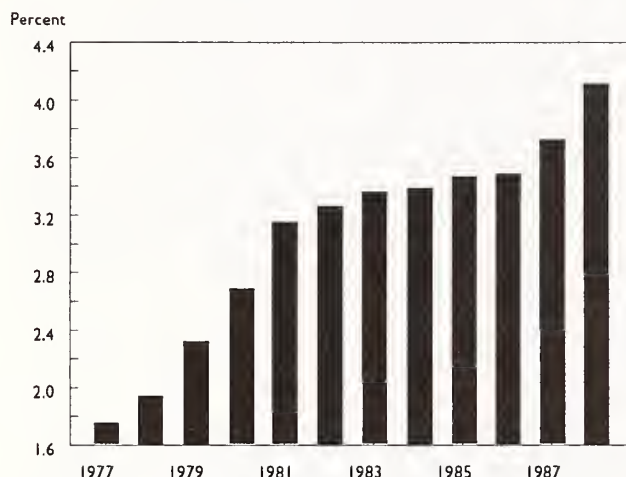
The rapid expansion of Canadian-owned U.S. affiliates in retailing from 1980 to 1988 resulted in a correspondingly large rise in the number of U.S. jobs they supported in retailing. As a result the shares of employment in Canadian-owned affiliates sharply rose from 14 to 37 percent, largely at the expense of the share of Canadian-owned affiliates' employment in manufacturing, which dropped from 50 to 33 percent.

Proponents of foreign direct investment often argue that foreign firms are a source of technology input and thus also make a contribution to productivity growth. A commonly used indicator of relative productivity is output per employee. In both 1980 and 1987, average gross product per employee was higher for U.S. affiliates in manufacturing than the U.S. manufacturing sector as a whole, no doubt partly due to differences in product composition. Moreover, over this period, productivity grew more rapidly in U.S. manufacturing affiliates than in the manufacturing sector as a whole -- in real terms rising by 42 and 32 percent, respectively, between 1980 and 1987.⁴ Comparable data on productivity are not available for other sectors.

There is also some question whether U.S. affiliates are more capital intensive than other U.S. businesses, particularly those in manufacturing, implying, for example, that because they are more automated they support less employment. Since the overall U.S. unemployment rate has displayed no trend up or down in the last century, it is more correct to conclude that higher capital intensity tends to increase wages paid to U.S. workers who are more productive when they have more and better tools.

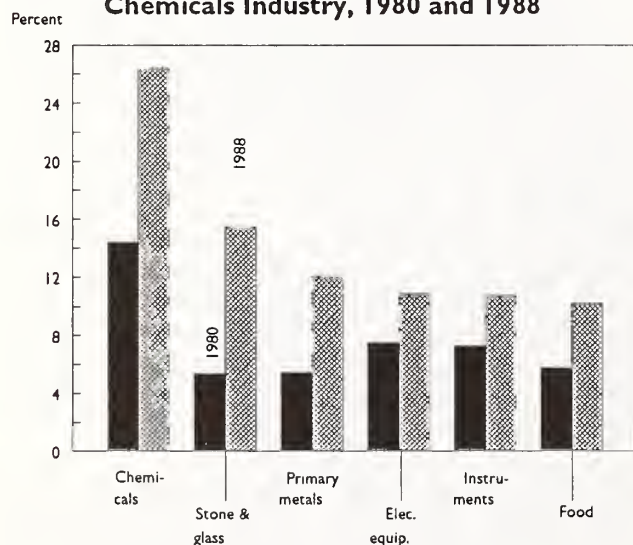
Although data are not available to measure capital intensity directly, some indirect insight can be inferred for those in manufacturing from data on annual plant and equipment expenditures per employee. These data suggest that on average the U.S. affiliates are considerably more capital intensive than all other U.S. manufacturing. In 1988 new plant and equipment expenditures (in 1982

Figure 5-5
U.S. Affiliates' Share of Nonbank Business Employment, 1977-88



Source: Bureau of Economic Analysis.

Figure 5-6
U.S. Affiliates' Shares of Employment Highest in Chemicals Industry, 1980 and 1988



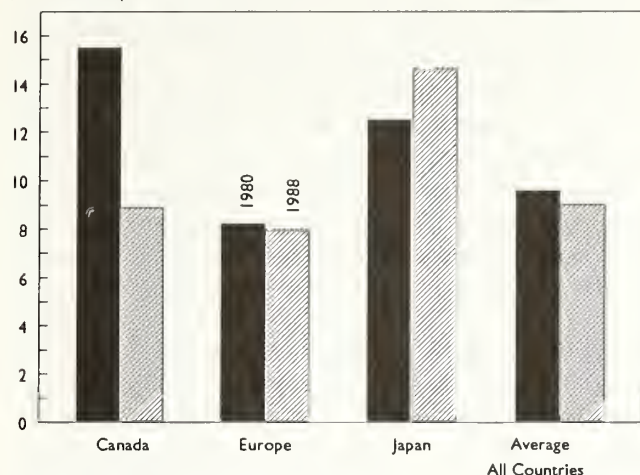
Source: Bureau of Economic Analysis.

⁴Excludes petroleum and coal products manufacturing. These productivity growth rate estimates assume equal output price increases and constant output composition for U.S. affiliates and all U.S. industry in manufacturing.

Figure 5-7

Capital-Intensity by Country of Ownership of U.S. Affiliates, 1980 and 1988 (Plant & Equip. Expenditure per Employee)

Thousand 1982 \$



Source: Bureau of Economic Analysis.

dollars) by U.S. affiliates were 45 percent higher than by all other manufacturing businesses -- \$12,200 versus \$8,400 per employee, respectively.⁵ Between 1980 and 1988, expenditures per worker were also much higher in Japanese-owned affiliates than the average for all other foreign-owned U.S. affiliates, with Japanese-owned affiliates' expenditures at \$14,600 per worker and all U.S. affiliates averaging \$9,000 per worker (Figure 5-7). As reported in Chapter 3 above, wages of employees of U.S. affiliates were some 20 percent higher than for all U.S. workers in 1988. However, all wages, not only those of affiliates' employees, are increased by the larger aggregate capital stock shared by all firms as a result of increased foreign investment in the United States.

Contribution to Technology Investment and Progress

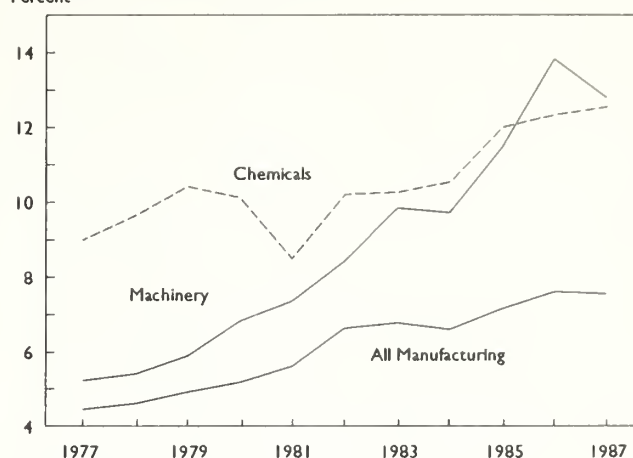
U.S. affiliates make a contribution to the technology base of U.S. industry through the inward transfer of technology from foreign parents and other foreigners, from in-house technology improvements, and from other U.S. sources. Measuring the actual inflow of technology is difficult, if not impossible. A frequently used, albeit incomplete, indicator of technology inflow is payments for royalties and license fees, which in the case of U.S.

⁵ New plant and expenditure and employment data for U.S. affiliates are on an enterprise basis and for all manufacturing are on an establishment basis and are therefore not comparable. This problem will be resolved with the data-link project.

Figure 5-8

U.S. Affiliates' Technology Intensity Highest in Chemicals & Machinery Industries (Ratio of R&D Expenditure to Gross Product)

Percent



Source: Bureau of Economic Analysis.

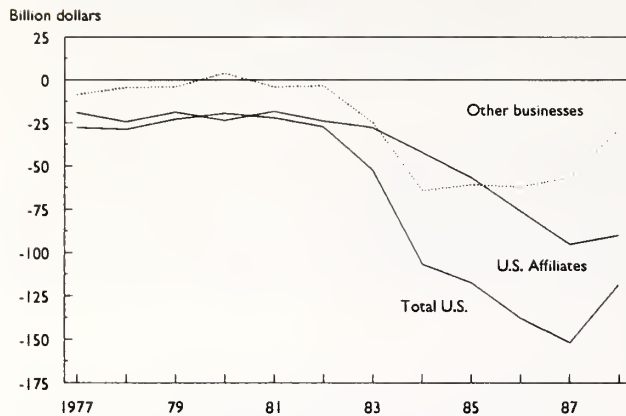
affiliates, doubled in little more than three years from \$800 million in 1986 to \$1.7 billion in 1989 and suggests a rapid rise in technology inflow to U.S. affiliates.

A second, often used indicator of the contribution to the U.S. technology base is the ratio of research and development expenditures to output, or gross product, commonly referred to as the technology intensity of output. In recent years, over 85 percent of R&D expenditures by U.S. affiliates have been by those in manufacturing industries.

Between 1977 and 1987, U.S. affiliates in manufacturing increased the technology intensity of their gross product by two-thirds, the ratio rising from 4.5 to 7.6 percent. The ratio peaked in 1986 and edged down slightly in 1987. The rise in their technology intensity was produced by the much more rapid increase in their R&D spending than the growth in their gross product. U.S. affiliates have also been funding more R&D per dollar of gross product than other manufacturing companies, with technology intensity in the affiliates in 1987 averaging one-sixth higher (at 7.6 percent) than the average in all U.S. manufacturing (6.5 percent).

The higher technology intensity of U.S. affiliates' output than that of all manufacturing was partly due to the higher share of the affiliates' gross product in more technology-intensive industries, such as chemicals. Between 1977 and 1986, by far the largest share of the affiliates' R&D expenditures and, therefore, their highest technology intensive gross product, was in chemicals and machinery industries (including computers and electronics) (Figure 5-8).

Figure 5-9
Components of the U.S. Merchandise Trade Deficit



Sources: Bureau of Economic Analysis and Bureau of the Census.

Role in U.S. Merchandise Trade

U.S. affiliates occupy a considerably larger role in U.S. merchandise trade than they do in other aspects of U.S. economic activity. In 1988, U.S. affiliates accounted for 19 percent of total U.S. merchandise exports and one-third of total U.S. imports.⁶

This heavy involvement is hardly surprising since almost by definition U.S. affiliates are aware of and participants in the international market. In some cases they are part of a multinational corporation producing particular products for the entire world operation. In other

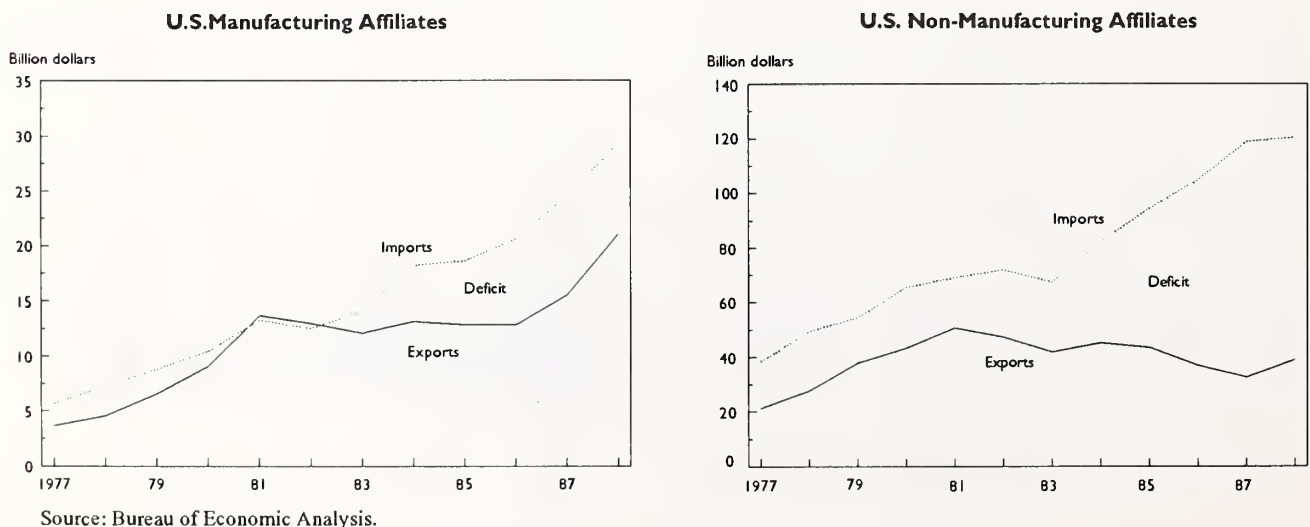
⁶ These trade shares do not take into account purchases of imported goods and sales of exported goods through other businesses.

cases, notably for automobiles, they are the local marketing offices for products produced by their parents in the parents' home countries. As sales to the United States reach a sufficiently large amount, firms typically switch from independent (and U.S. owned) sales representatives to U.S. affiliates. Similar patterns would be observed for overseas affiliates of U.S. corporations.

The discussion in Chapter 3 showed that the overall level of the current account or trade deficit is determined by underlying trends with respect to national investment and saving. Therefore, while we can compute separate trade balances for U.S. affiliates and other U.S. businesses, we must be careful to note that the causation runs from the overall trade deficit to these components and not the other way around. These data lead to four major conclusions: (1) U.S. affiliates' export sales -- like that of other U.S. businesses -- were retarded by the appreciation of the dollar through 1985. (2) A disproportionate share of the rise in imports associated with the dollar appreciation was initially handled by U.S. owned businesses. (3) However, as firms adjusted marketing arrangements to their larger U.S. sales, the share of imports which flowed through affiliates rebounded. (4) Most of the movement in trade totals of U.S. affiliates in the 1980s were concentrated in movements of imports of nonmanufacturing businesses from their parents -- apparently increases in sales through local marketing arms in response to economic fundamentals.

From 1977 through 1982, the U.S. affiliates' trade deficit was virtually equal to the overall U.S. merchandise trade deficit, fluctuating around \$25 billion (Figure 5-9). After 1982, the U.S. affiliates' trade deficit first rose more slowly than the total trade deficit through 1984. Then the gap between the total and affiliates' trade deficits narrowed only slightly through 1987, and finally declined substantially in 1988 (the last year for which data are

Figure 5-10
U.S. Affiliates Trade, by Manufacturing and Non-Manufacturing Business, 1977-87



Source: Bureau of Economic Analysis.

available).

Turning to Figures 5-10 and 5-11, we can see that for the most part the increase in the U.S. affiliates' trade deficit after 1982 was concentrated in transactions with parents by non-manufacturing (primarily wholesaling) affiliates. The increase in the deficit reflected an increase in imports while exports stagnated due to dollar appreciation. As with imports by U.S.-owned firms, the merchandise trade data do not provide information on the composition of imports by U.S. affiliates in terms of whether they were goods for resale or for their own use as intermediate inputs or capital goods. U.S. affiliates' exports generally declined from 1982 through 1987 -- although this was alleviated to the extent that parents provided a protected market.

A dominant share of both total imports and exports are accounted for by the U.S. affiliates in wholesaling. Wholesalers accounted for over 70 percent of imports by

U.S. affiliates in both 1980 and 1987. In 1988, U.S. affiliates in wholesaling accounted for 73 percent of the total imports by all U.S. affiliates and 59 percent of their total exports. Moreover, in 1988, U.S. affiliates in wholesaling accounted for \$74 billion (83 percent) of the total deficit of all U.S. affiliates of \$90 billion.

The major share of U.S. affiliates' foreign trade is with their own foreign parents, with the parents share in 1988 far larger in the affiliates' imports (76 percent) than in their exports (42 percent). The parents' share of imports was highest for affiliates in wholesaling (81 percent of their total imports) compared, for example, with those on average in all manufacturing industries (69 percent) and petroleum (46 percent). However, the share of total imports obtained from parents was far higher for U.S. affiliates in motor vehicle and parts manufacturing (85 percent) than the average for all manufacturing (69 percent). The 89 percent rise in imports from parents over 1980-87 (the latest data year for commodity composition of trade with parents) was mainly in machinery products (up 212 percent) and motor vehicles and parts (up 195 percent).

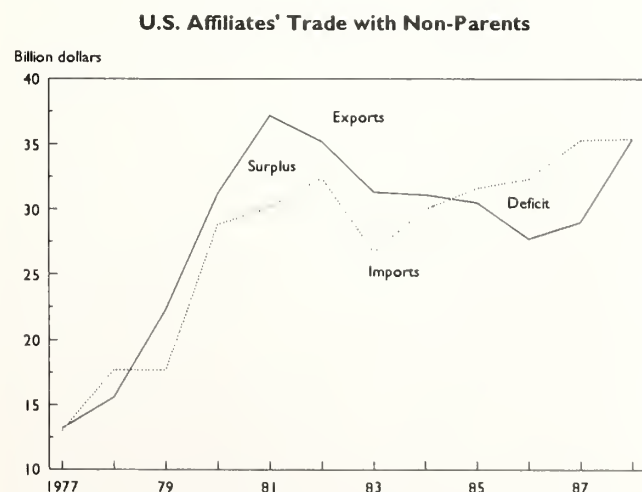
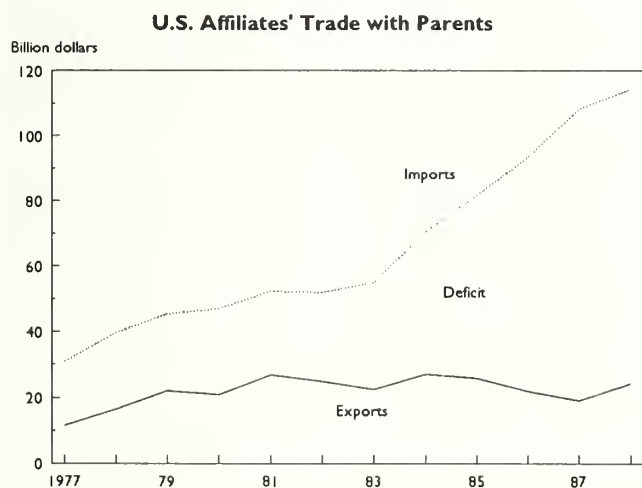
The U.S. affiliates' weak export performance largely reflected declining exports of food and inedible crude materials, except fuels, which were their largest export categories and accounted for 55 percent of their total exports in 1980. The 1980-1987 fall in their exports in these two important categories -- a 44 percent decrease -- paralleled the fall in total value of U.S. exports in those two categories. However, the 1980-87 drop in U.S. affiliates' exports of food and inedible crude materials was more than offset by major increases in their exports of chemicals, machinery, and other manufactured products.

State Output and Employment Supported by U.S. Affiliates

Individual U.S. states and communities compete vigorously to attract new investment and to retain existing production facilities, whether domestically- or foreign-owned. They point out their attractiveness in terms of climate, resource base, transportation system, labor force, purchasing power of residents, proximity to suppliers of raw materials and other inputs of goods and services, and educational institutions. Their offers to prospective investors often include tax benefits and targeted public spending on infrastructure, such as roads.

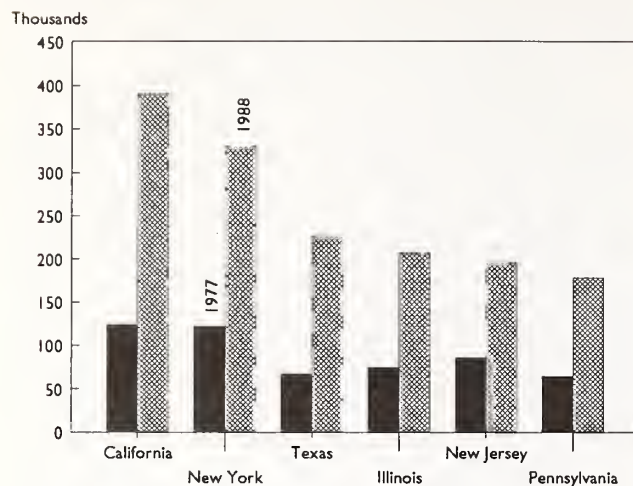
These efforts have contributed to new U.S. affiliates locating where their industry was not previously important, such as the location of a number of Japanese-owned motor vehicle plants in the south-eastern U.S. farm-belt. In recent years, employment by U.S. affiliates, as in U.S. employment generally, has grown more rapidly in the south-eastern states, the Far West, and the Southwest. Relatively slow U.S. affiliate employment growth has occurred in the Great Lakes and mid-eastern states. In

Figure 5-11
U.S. Affiliates' Trade with Parents and
Non-Parents, 1977-88



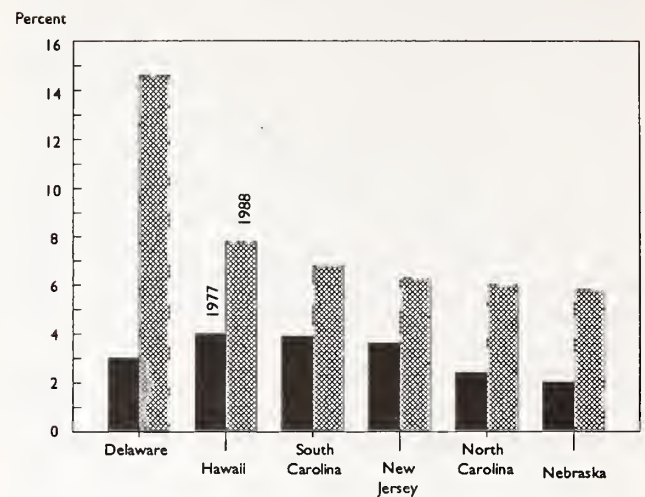
Source: Bureau of Economic Analysis.

Figure 5-12
Top Six States in U.S. Affiliates' Employment,
1977 and 1988



Source: Bureau of Economic Analysis.

Figure 5-13
Top Six States in U.S. Affiliates' Shares of
Employment, 1977 and 1988



Source: Bureau of Economic Analysis.

1988, the largest shares of nonbank employment by U.S. affiliates were in California, New York, Texas, Illinois, New Jersey, and Pennsylvania (Figure 5-12). However, those states differ from states where U.S. affiliates have the largest relative share of employment, which include (in descending share of total nonbank employment): Delaware (14.6 percent), Hawaii (7.8 percent), South Carolina, New Jersey, North Carolina, Nebraska, Georgia, West Virginia, Tennessee, Alaska, Maine, and others (Figure 5-13).

State location of U.S. affiliate employment across industries differs widely in importance (in terms of the industry of manufacturing affiliates' principal output), with chemicals important in Delaware, California, and New Jersey, petroleum in Alaska, machinery (including computers and electronics) manufacturing in California and North Carolina, metals manufacturing in Illinois and Ohio, and food products manufacturing in California and Illinois.

FOREIGN DIRECT INVESTMENT IN THE U.S. ELECTRONICS INDUSTRY

by Donald H. Dalton*

U.S. affiliates of foreign firms in the electronics industry rapidly expanded their participation in the U.S. market during the 1980s, as indicated by increases in property, plant, and equipment, employment, and sales.¹ Moreover, data on U.S. affiliates' activities suggest that they have supported U.S. employment, output growth, and technology. Some countries' affiliates are concentrated in subgroups within the electronics industry, with Japanese-owned affiliates concentrating in computers and office equipment, consumer electronics, and electronic components, and European-owned affiliates concentrating in telecommunications and instruments. Both national groups show some degree of vertical integration, with the very large multinational corporations' directly investing upstream and downstream.

As the world's largest single market of electronics equipment and components, the U.S. market is important to European, Canadian, and Japanese electronics producers. In the 1970s and early 1980s, foreign producers made major inroads into the U.S. market, gaining large market share through imports, which in turn, generated trade frictions between the United States and its trading partners, especially Japan. Foreign direct investment in the United States became an alternative means of serving the U.S. market, increasing the opportunity for economies of scale, and providing better direct access to the U.S. distribution networks and to the U.S. technology base.

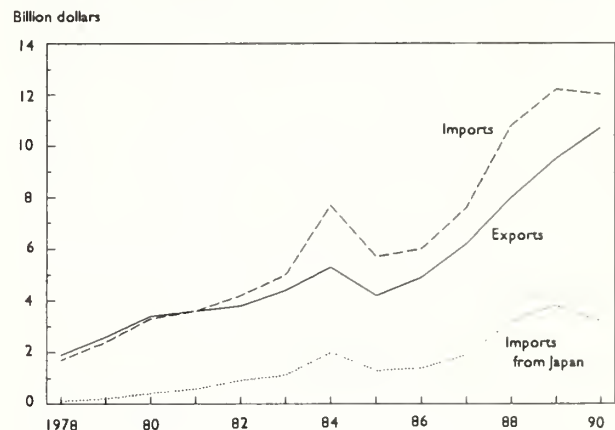
In the first half of the 1980s, the rising import share of U.S. electronics market caused some observers to have serious questions about U.S. competitiveness in this industry. By the mid-1980s, imports held a large and apparently permanent share of major segments of the U.S. electronics market (Figure 6.1).

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¹The U.S. electronics industry, as broadly defined in this chapter, includes office and computing machinery (SIC 357), household audio, video, and communications equipment (SIC 366), electronic components and accessories (SIC 367), and instruments (SIC 38). BEA data have been supplemented with a data set created for this study from publicly available sources by the Office of Business Analysis, Economics and Statistics Administration, to give added insight into the nature of FDIUS on each of these four industries, plus semiconductor materials and equipment (SM&E). These additional data are not wholly comparable to BEA data.

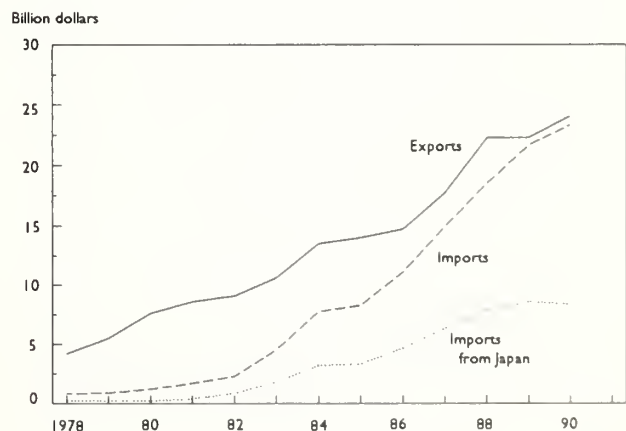
Foreign direct investment has been revalued from historical cost to current cost and market value bases at the aggregate level, but not for individual industries. Hence, historical costs are used in the analysis.

Figure 6-1A
U.S. Total Trade in Semiconductors, 1978-90



Source: Bureau of the Census, and International Trade Administration, Office of Microelectronics.

Figure 6-1B
U.S. Total Trade in Computers & Peripherals, 1978-90



Source: Bureau of Economic Analysis, and International Trade Administration, Office of Microelectronics.

- o Imports of computers and peripherals increased from \$1 billion in 1980 to \$11 billion in 1986, and \$19 billion in 1990.
- o Imports of semiconductors more than doubled in four years, rising from \$3.3 billion in 1980 to \$7.6 billion in 1984, reaching \$12 billion in 1990.
- o The growth in imports in telecommunications equipment was also substantial -- the import share rising from 4 percent in 1980 to 45 percent by 1984, with Northern Telecom of Canada gaining most of share lost by U.S. companies.²

East Asian nations, particularly Japan, were the major source of these electronics imports, as the bilateral trade deficits with these nations, especially in computers, grew rapidly from 1980 to 1988. The trade deficits in semiconductors and telecommunications equipment generated significant trade frictions with U.S. trading partners, and Japan in particular, over reciprocal market access.

Growth of Foreign Direct Investment in Electronics

Foreign producers have invested in the United States, partly in response to trade frictions, as a means of assuring access to the large U.S. market, and of achieving economies of scale. Foreign direct investment is also a means of exploiting technological advantages the foreign firm has, as well as keeping abreast of advances in U.S. technologies.

The participation of foreign firms in the U.S. electronics industry has steadily risen over the decade, although the character and impact of the increase is not easy to assess. This industry is dynamic, with the competitiveness of its firms vitally dependent on rapidly changing technologies with short-life cycles. Also, major, continuing shifts in U.S. versus foreign ownership of firms in this industry make judgments about trends in foreign ownership rather tenuous. For example, the ratio of U.S. affiliates' employment to total U.S. employment in the electronics industry shows increased participation of U.S. affiliates, with a doubling of share of the total over the 1980s. However, changing ownership, with foreign owners buying and selling facilities, and with the remaining divisions and facilities, accordingly, reclassified in other sectors or subindustries, complicates assessment of the importance of this increase.

Property, Plant, and Equipment³

Gross property, plant, and equipment (PP&E) of U.S. affiliates more than tripled between 1980 and 1988, increasing from \$3.5 billion in 1980 to \$13.4 billion in

1988 (in book value/historic cost terms). European-owned affiliates accounted for 59 percent of gross PP&E of all foreign countries in 1988. The largest share of investment in PP&E in 1988 was held by foreign firms from the Netherlands, followed by Japan, United Kingdom, France, Germany, and Canada.⁴

Growth among the subsectors of the electronics industry was not uniform, and the data suggest that the composition of FDIUS in the electronics industry changed dramatically between 1980 and 1988. Of the four major electronic industries, foreign investment in PP&E in the household video, audio, and communications equipment industry increased most rapidly, at 29.5 percent per year, and moved from 17 percent of total U.S.-affiliate PP&E in 1980 to 35 percent, the largest percentage of the total by 1988. PP&E also rose rapidly in the instruments and related products, growing at 27 percent a year and shifting from 11 percent in 1980 to 25 percent of total U.S.-affiliate PP&E by 1988. The pace of increase in foreign investment in computers and office equipment was slightly slower, at 24.5 percent a year, accounting for 13 percent of the total U.S.-affiliate PP&E in 1980 and 20 percent in 1988. Growth of PP&E in electronic components was the lowest, at 2.9 percent a year, and its share of the total dropped from 58 percent in 1980 to 19 percent in 1988 (Figure 6-2). This slow growth of PP&E in components and decline in share of the total U.S.-affiliate PP&E reflect in large part the publicly reported sale of a large components facility by a foreign owner during this period. Such changes in the firm composition of the industry will be better explained by the project linking confidential Census and BEA data on foreign direct investment.

Employment

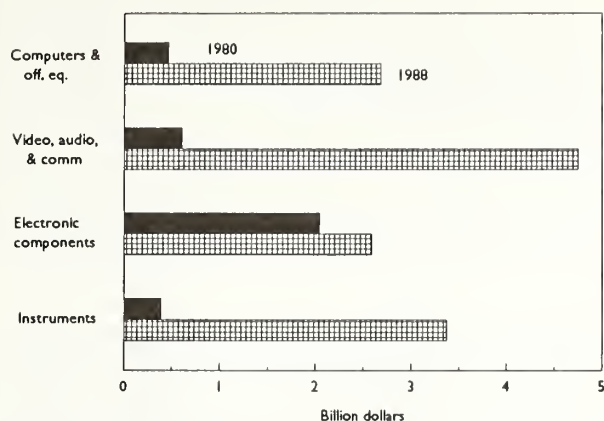
Data on U.S. affiliate employment are probably a better measure of the growth of U.S. affiliates in the electronics industry than PP&E data, which include price increases. Employment data show a less rapid rise than PP&E in the 1980s, growing at about 4.2 percent a year, from 177,700 workers in 1980 to 247,200 employees in 1988. The data also reflect ownership changes taking place in the electronics industry. Employment grew fastest in computers and office machinery (9.1 percent a year), followed by household video, audio, and communications equipment (8.7 percent a year) and instruments (5.6 percent a year). Components and accessories showed a decline of 2.2 percent a year in employment between 1980 to 1988, reflecting the sale of a large component facility to a U.S. owner (Figure 6-3).

²National Telecommunications and Information Administration, Office of Policy Analysis and Development.

³ These data on gross property, plant, and equipment are based on their historical book value, and may understate their market value.

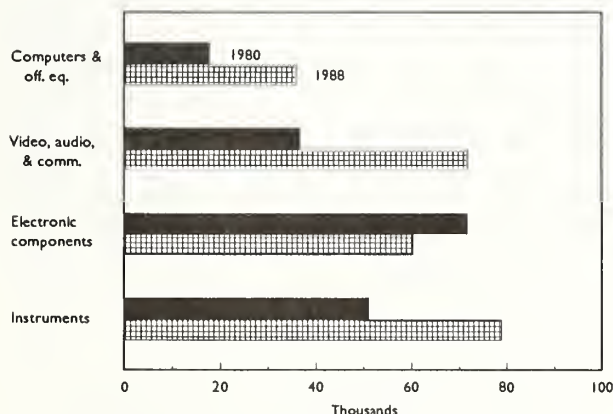
⁴ Because of disclosure restrictions, PP&E values by individual country are not available.

Figure 6-2
Stock of Property, Plant & Equipment of U.S. Affiliates in the Electronics Industry



Source: Bureau of Economic Analysis.

Figure 6-3
Employment by U.S. Affiliates in the Electronics Industry



Source: Bureau of Economic Analysis.

Sales

Sales of U.S. affiliates increased at 13.7 percent a year (in current dollars), from \$11.4 billion in 1980 to \$29.2 billion in 1988. U.S. affiliate sales in some electronics sectors grew more rapidly than others (Figure 6-4). The household video, audio, and communications category had the largest increase, climbing from 20.3 percent of total affiliate sales in 1980 to 48 percent or \$14.1 billion in 1988, and accounting for the largest share of the total in 1988. This rise was mostly the result of large foreign acquisitions in household video, audio, and communications equipment in the 1980s. Electronic components held

the largest share of foreign-affiliated sales in 1980, but declined in relative importance in the U.S.-affiliate electronics sales to only 13.5 percent of the total by 1988. The fall in electronic components' importance is due in part to the sale of a large components facility during the period. U.S. affiliate sales of instruments and related products rose from 14.2 percent of total affiliates sales to 22 percent by 1988. The share held by computers and office equipment increased slightly, to 15 percent of the total by 1988.

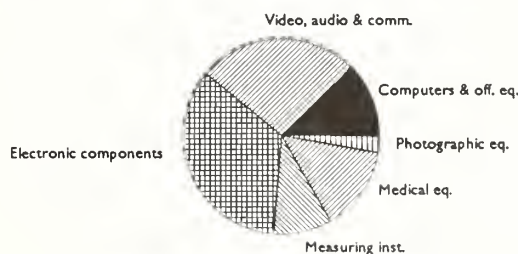
Role of U.S. Affiliates in the U.S. Economy

U.S. electronics affiliates of foreign firms have played a small, but growing role in the U.S. economy. They have supported U.S. employment, output growth, and technology. U.S. affiliates in the electronics industry have also been active importers and exporters.

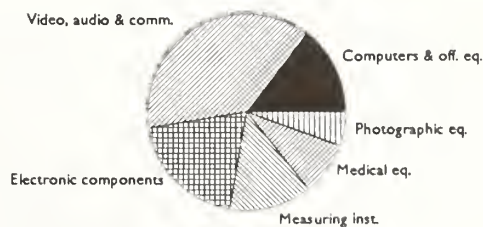
Employment and Market Share

Employment data indicate the increasing participation of U.S. electronics affiliates of foreign firms in the

Figure 6-4
Sales of U.S. Affiliates in the Electronics Industry



1980 Sales
\$11.1 Billion



1988 Sales
\$31.0 Billion

Source: Bureau of Economic Analysis.

U.S. electronics market. They have provided jobs for a rising proportion of U.S. workers, accounting for 14.5 percent of the 1.7 million employees of all electronics companies in the United States in 1988, up from 7.7 percent in 1980 (Figure 6-5).⁵ The shifts in U.S. affiliates' shares of total U.S. employment within the four electronics industry groups between 1980 and 1988 indicate their increased relative importance as employers in video, audio, and communications equipment and instruments manufacturing, and decreased importance in components manufacturing (Table 6.1). This change in importance is partly due to shifts in ownership -- foreign versus domestic -- in the components industry; specifically, the sale of a large electronic components and accessories facility. The data, therefore, cannot be used, without numerous qualifications, in analyzing the performance of U.S. affiliates -- for example, changes in capital to labor ratios, in economies of scale, in product composition and lines of business.

One indicator of U.S. affiliates' support to the U.S. economy is the growing number of high-wage jobs in the economy. Wages in the U.S. electronics industry are substantially higher than the average for all manufacturing. U.S. affiliates, paying these standard electronics industry wages, are providing a rising proportion of these high-wage jobs in the electronics industry.

Another often used indicator is compensation per employee for U.S. affiliates. Compensation (measured on an enterprise basis), includes wages, salaries, and benefits that affiliates paid to U.S. workers. Affiliates in computers and office equipment had the highest compensation per worker in 1988, \$45,260, followed by household video, audio, and communications equipment (\$35,605). Two industry groups, components and instruments, ranked

Table 6.1
U.S. Affiliates' Share of Total U.S. Employment in the Electronics Industry
(In percent)

	1980	1988
Computers & office equip.	4.1	9.3
Video, audio, & communications equip.	5.9	29.3
Electronic components & accessories	13.0	12.2
Instruments	7.2	23.9
Total	7.7	14.5

Source: Bureau of Economic Analysis and U.S. Bureau of Labor Statistics.

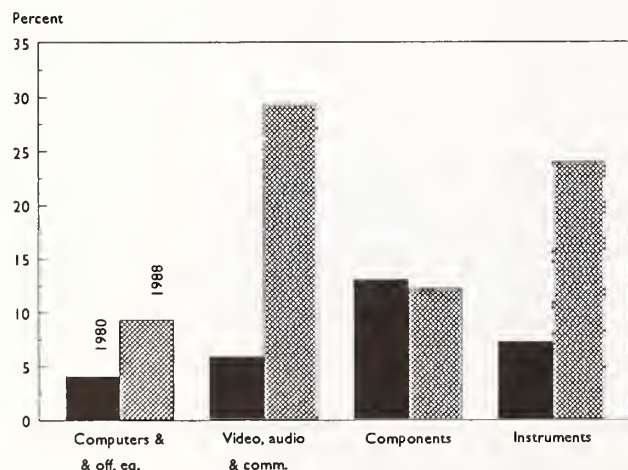
slightly below the compensation per employee for all U.S. affiliates in manufacturing, which averaged \$33,700 in 1988. Compensation paid by U.S. affiliates in these industries in 1988 appears comparable with the estimated average compensation paid by all U.S. manufacturing companies (Figure 6-6).⁶

These comparisons of compensation per employee for U.S. affiliates with that for U.S. electronics industries should, however, be qualified. Compensation data for U.S. affiliates are available on an industry of affiliate, or enterprise basis, and data on U.S. industry, on an establishment basis. Consequently, to the extent that U.S. affiliates are classified under manufacturing, when they in fact also are in the wholesale trade industry (or vice versa), for

⁵U.S. affiliates' employment by industry of sales, rather than industry of affiliate; complete definitions are available in Appendix Glossary. Industry of sales data are more comparable to U.S. industry employment information, which is collected on an establishment basis.

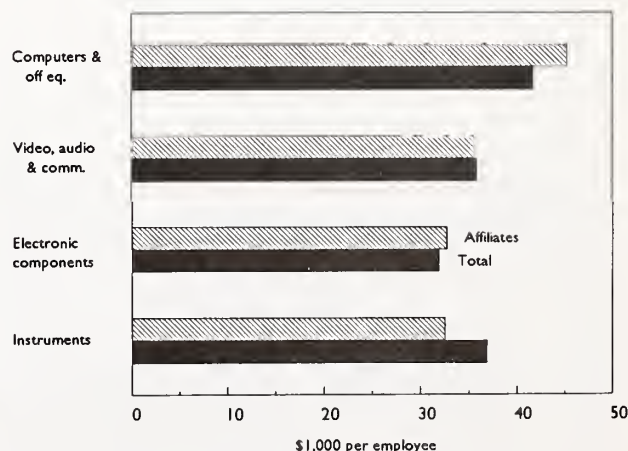
⁶U.S. data from the Bureau of the Census.

Figure 6-5
U.S. Affiliates' Share of U.S. Electronic Industry's Employment



Sources: Bureau of Economic Analysis and International Trade Administration.

Figure 6-6
Compensation per Employee in the U.S. Electronics Industry, 1988



Source: Bureau of Economic Analysis and Bureau of the Census.

example, could understate (or overstate) the comparison. This bias would appear to reduce affiliates' wages relative to overall wages since wholesaling wages are lower than those in manufacturing. The bias in the comparison should be taken into account in drawing any conclusions about relative labor compensation. These comparisons can be made with the linked data from the BEA-Census project.

Growth in sales of U.S. affiliates reflects their increasing presence in the U.S. electronics industry, as foreign investors acquired more U.S. companies and set up new facilities. Sales of U.S. affiliates tripled during the 1980s.⁷ This growth in sales cannot, however, be compared against that of the total U.S. industry, to determine changes in market share of U.S. affiliates, although employment data provide some means for gauging inroads made in market share. Data on U.S. industry sales for each of the four electronics subsectors (three-digit SIC) are not available, and shipments data, which are collected on U.S. industry, are not comparable to sales of U.S. affiliates data.

Merchandise Trade

Both exports and imports of U.S. electronics affiliates grew over the 1980s. The pace of increase paralleled that of exports and imports for all U.S. electronics industry. Exports doubled for both U.S. affiliates and the U.S. electronics industry, and imports quadrupled. Growth of merchandise trade within the electronics industry was not uniform, however, for U.S. affiliates and U.S. industry as a whole (compare Figures 6-7 and 6-8). Differences for U.S. affiliates can be attributed, in part, to changes in the classification of one affiliate as previously discussed as well as to acquisitions which brought firms into the affiliates figures for 1988 which were not in the 1980 base data.

The trade balance of U.S. affiliates of foreign firms showed a small surplus in 1980, with surpluses in computers and office equipment and electronic components, and deficits in audio, video, and communications equipment and instruments. The trade balance moved to a deficit by 1987 and 1988, with imports exceeding exports in all four subindustries (Figure 6-8).⁸ The deficits ranged from \$1.4 billion for household video, audio and communications equipment to \$298 million for computers and office equipment.

Paralleling the entire industry, between 1980 and 1988, imports for U.S. affiliates increased at an annual rate of 17 percent, more than double that of their export growth. Imports by U.S. affiliates in computers and office equipment grew fastest at 22.5 percent a year between 1980 and 1988, while their exports grew at only 8.6 percent over the same period. Although imports by U.S. affiliates in the audio, video, and communications equipment industry grew rapidly at 21.5 percent a year from 1980 to 1988, exports from this group rose slightly faster. Trade of instruments affiliates showed a similar pattern, with im-

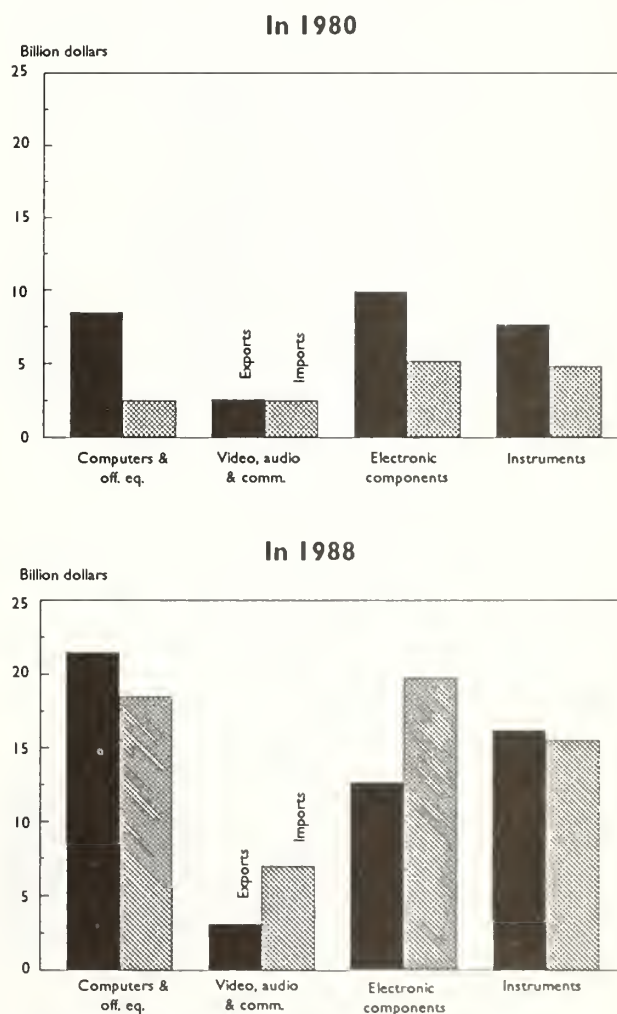
ports rising 19.4 percent a year, and exports, 23.5 percent a year over this time period. Imports by electronic components affiliates showed a slower growth at 8.8 percent a year, and exports, a decline of 11 percent a year; however, the sales of a large facility to a U.S. owner during this period makes any conclusions about these changes questionable.

For the U.S. electronics industry, the trade balance was a \$9,771.7 million surplus in 1980, with surpluses in all four subindustries. Like U.S. affiliates, the trade balance moved to a deficit by 1987 (\$8,418.1 million) and 1988 (\$7,527.5 million). Although computers and office equipment and instruments continued to show surpluses, these surpluses were considerably smaller than in 1980--one-half the size for computers and office equipment and one-fifth the size for instruments. Household audio,

⁷Sales data are on an industry of sales basis, in current prices.

⁸The separate 1980 trade balance is not reported for the U.S. affiliates in the electronics sector in order to avoid the disclosure of individual businesses' exports in the audio, video, and communications equipment sector.

Figure 6-7
U.S. Total Trade in Electronics Products



Source: Bureau of the Census.

video, and communications equipment and electronic components and accessories had relatively large deficits by 1988, going from surpluses of \$165.2 million and \$715.1 million, respectively, in 1980 to deficits of \$3,899.9 million and \$7,107.5 million, respectively, in 1988 (Figure 6.8).

Any conclusions about comparisons of U.S. affiliates' trade to total U.S. imports and exports of electronics should be drawn with caution. Data for U.S. affiliates are on an industry of affiliate or enterprise basis, while data for total U.S. imports and exports are on a product basis. Hence, the data are not comparable. Trade information on U.S. affiliates may be biased upward or downward, depending on how the U.S. affiliate was classified by industry. That is, whether or not 51 percent or more of the U.S. affiliate's activities are in the manufacture of electronics products, or in wholesale trade of electronics. Moreover, the reported trade data reflect the exports and imports of

Table 6-2
Ratio of Exports to Sales (Shipments), 1988
(In percent)

	U.S. Affiliates	U.S. Industry
Computers & office equip.	15.0	37.7
Audio, video & comm. equip.	8.3	4.1
Elec. components & accessories	8.5	23.5
Instruments	12.2	59.0
Total	10.3	24.9

Sources: Bureau of Economic Analysis, and Bureau of the Census, International Trade Administration, *U.S. Industrial Outlook*, 1991.

U.S. electronics affiliates, but not necessarily their exports and imports of electronics products.

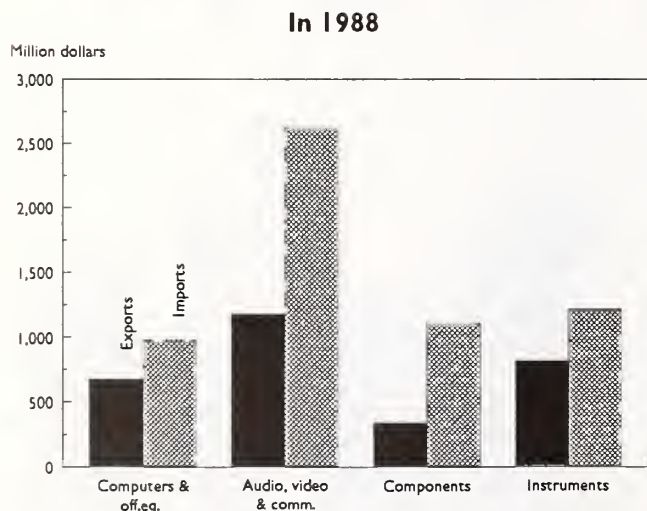
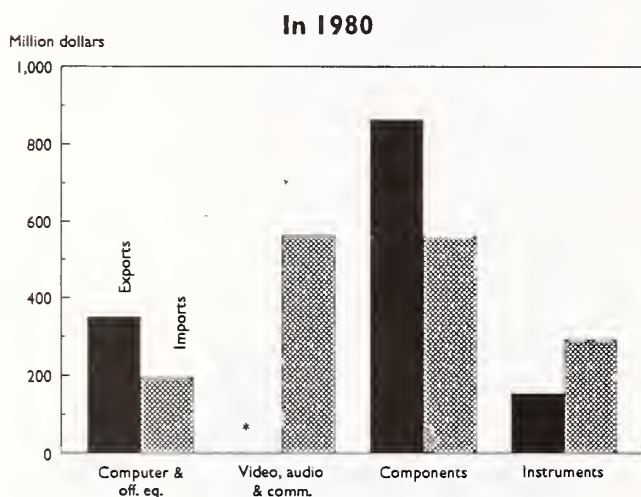
Although trade data for U.S. affiliates and the U.S. electronics industry as a whole are not comparable, some very rough comparisons of their activities have been made. Using the ratios of exports to sales for U.S. affiliates, and exports to shipments for U.S. electronics industry as a whole, the data suggest that U.S. affiliates tend to be less export oriented than U.S. electronics firms in 1988,⁹ except in the household audio, video, and communications industry. For U.S. affiliates, the lower ratios may reflect the strategic objectives of the direct investments to serve the U.S. market. The importance of exports differs widely among sub-industries of electronics, nonetheless (Table 6-2).

Trade of U.S. affiliates of different foreign parents followed different patterns. Grouped by country of ownership, Japanese-owned affiliates led in imports in 1988, followed by Dutch, German, and U.K. affiliates. Netherlands-owned affiliates generated the most exports in 1988, followed by affiliates of the United Kingdom, Japan, France, and Germany. In terms of subindustries, however, exports and imports tended to be dominated by affiliates of foreign parents from the same countries.

Affiliates producing electronic components, with Japanese and West German parents, led imports and exports.

- o Instruments affiliates, with parents from the United Kingdom, led imports and exports.
- o Affiliates of Japanese and French parents, producing computers and office equipment, led exports, while affiliates of foreign parents from Japan and the Netherlands led imports.
- o In audio, video, and communications equipment, the Netherlands, U.K., and Japanese affiliates were the leading exporters, and the leading importers were U.S. affiliates with parents from Japan and the Netherlands.

Figure 6-8
U.S. Electronics Affiliates' U.S. Trade



*Not published to avoid disclosure of business operations.
Source: Bureau of Economic Analysis.

⁹A comparison for 1980 is not possible because export data for audio, video, and communications equipment cannot be disclosed.

Technology

Whether U.S. affiliates of foreign firms have played a role in U.S. technology development, or have transferred technology out of the country, has been a hotly debated issue. A full assessment of the contribution of U.S. affiliates to U.S. technological advance requires more information than is available for U.S. affiliates. Information is needed on the levels, nature, and focus of affiliates' R&D activity. Disaggregated data are needed on kinds of R&D activity at their U.S. labs and proportion of funds devoted to each type of activity, contracts paid to U.S. firms to do work for them, support of R&D at U.S. universities, and sources and types of inward technology transfer from parent firms or from others. Such data, however, are company proprietary, not disclosed by U.S. affiliates or, for that matter by U.S. firms, and thus, are not expected to become available from the data link project. A partial picture of the R&D activity of U.S. affiliates, nonetheless, can be provided by R&D expenditure data from BEA and information on research facilities from the International Trade Administration of the Department of Commerce.

R&D spending by foreign-affiliated companies in the U.S. electronics sector rose from nearly \$400 million in 1980 to \$1.6 billion in 1988, according to surveys by BEA.¹⁰ The sector with the fastest growth in R&D spending by U.S. affiliates was household video, audio, and communications equipment. In 1988, the shares of U.S. affiliates R&D spending were:

- o Video, audio, and communications equipment, 45 percent.
- o Computers and office equipment, 25 percent.
- o Electronic components, 17 percent.
- o Instruments, 14 percent.

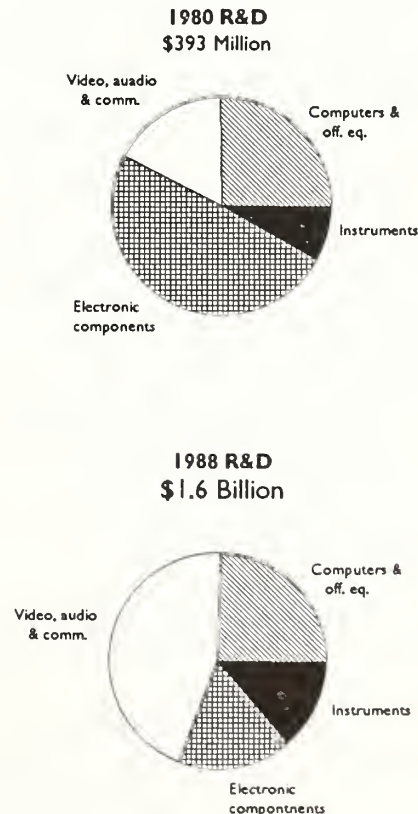
The share of R&D by electronics components declined between 1980 (49 percent of the total) and 1988, because of the sale of a large components facility (Figure 6-9).

A common indicator of technology intensity of output is the ratio of R&D expenditures to sales. Since 1980, the ratio of R&D spending to sales for U.S. electronics affiliates has increased for all industry groups (Figure 6-10). The average ratio rose from 3.4 percent in 1980 to 5.6 percent in 1988. In 1988, the ratio for U.S. affiliates ranged from: 9 percent for computers and office equipment; to 7 percent for components; 5 percent for household video, audio, and communications equipment; and 3.3 percent for instruments and related products. The average ratio has also been rising in the 1980s for U.S. electronics industries.

A comparison of U.S. electronics affiliates' ratio of R&D spending to sales to that of all U.S. electronics companies shows that foreign-owned affiliates spent somewhat fewer internal resources on R&D in the United States in all electronics categories except video, audio, and communications (Figure 6-11). However, except for instruments, the ratios do not appear to be significantly different in 1988. U.S. companies in computers and office equipment had a R&D-to-sales ratio of 11.5 percent in 1988, according to the National Science Foundation,¹¹ compared with the ratio of 9 percent for affiliates, using BEA data. The gap was widest in instruments and related products, with U.S. companies spending 7.3 percent of

¹¹National Science Foundation, *Selected Data on Research and Development in Industry: 1989*, February 1991. NSF data include only companies that perform R&D, and the sales data reflect the sales of only companies that perform R&D. Thus, the ratios for U.S. companies may be biased upward to the extent that sales of companies not performing R&D are excluded. However, in the electronics industry, the numbers of firms not performing R&D are likely to be minimal. The 1988 data are based on panel data, rather than a census; the data, however, should be representative of the universe of electronics firms.

Figure 6-9
Share of U.S. Electronics Affiliates' R&D Spending by Sector



Source: Bureau of Economic Analysis.

¹⁰R&D data collected by BEA on U.S. affiliates are on an "industry of affiliate" or enterprise basis. Data collected by the National Science Foundation on U.S. companies are also on an enterprise basis.

sales on R&D, while affiliates spent 3 percent. U.S. affiliates had a higher ratio of R&D to sales in the category for video, audio, and communications equipment.

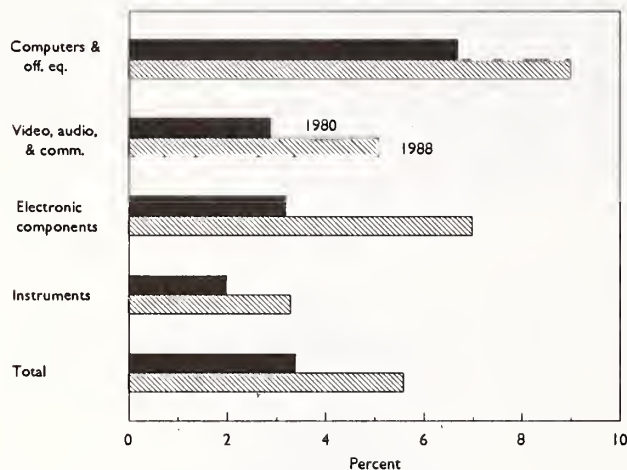
Another way of gauging R&D activity by U.S. affiliates is the number of research facilities. The list of R&D facilities of U.S. affiliates, compiled by the International Trade Administration's Office of Computers and Business Machines, shows that in 1990, 36 U.S. affiliates

of foreign companies had 85 major electronics research facilities in the United States. The list includes only newly established R&D facilities, and does not adjust for the size of the facilities, which ranges from 20 to 200 employees. No attempt has been made to determine how representative the list is of the universe of R&D facilities of U.S. affiliates.

The list shows by country ownership that in 1990, seven European-owned electronics companies with 21 U.S. R&D facilities, one Canadian-owned firm (Northern Telecom) had 4 R&D facilities, and 28 Japanese-owned companies had 60 R&D facilities. Generally, each multinational company has established a R&D facility for each major line of business, including semiconductors. The U.S. affiliate of Siemens (Germany) had the most R&D facilities, with 9 different R&D sites. Two U.S. affiliates of Fujitsu and NEC (Japan) each had 6 R&D facilities, and three Japanese-owned companies (Hitachi, Matsushita, and Sony) each had 5 R&D sites.

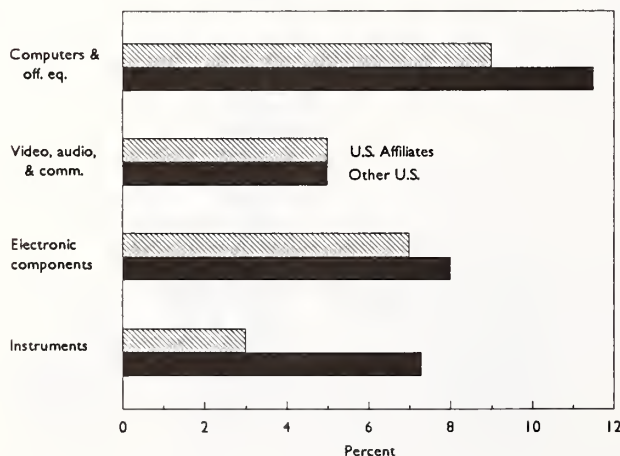
Although the numbers of U.S. affiliates' R&D facilities and their proximity to major U.S. universities shed some light on the types of technology they pursued, more information is needed to determine the role of affiliates in U.S. technology development. The contribution of affiliates to the U.S. technology base has been subject to doubt by some technology analysts because a portion of their R&D spending is believed to be used for monitoring U.S. innovations. However, some U.S. affiliates conduct meaningful R&D, resulting in mutual exchanges (two-way) of technology between parent companies and subsidiaries, which does contribute to the U.S. economy and technology base.

Figure 6-10
U.S. Electronics Affiliates' Ratio of R&D Spending to Sales



Source: Bureau of Economic Analysis.

Figure 6-11
Ratio of R&D Spending to Sales by All U.S. Companies & U.S. Affiliates in the Electronics Industry, 1988



Source: Bureau of Economic Analysis and the National Science Foundation.

Critical Technologies

Critical technologies are those technologies identified as important to providing weapons systems and to U.S. national security by the U.S. Department of Defense.¹²

A wide range of critical technologies is embodied in the electronics goods produced in U.S. affiliates. Indeed, many of these technologies are at the leading edge, and have both civil and military applications. These technologies include, among others, composite materials, machine intelligence and robotics, parallel computer architectures, and semiconductor materials and microelectronic circuits.

Semiconductor Materials and Equipment

Semiconductor materials and equipment have been designated by the Department of Defense as critical technologies. Moreover, the National Advisory Commit-

¹²Report to Congress on the Defense Industrial Base: Critical Industries Planning, Department of Defense, October 1990.

tee on Semiconductors has pointed out that financial and technological weaknesses in U.S. semiconductor equipment and materials suppliers reduce the competitiveness of U.S. semiconductor component manufacturers in the world electronics product markets.¹³ The manufacture of the fastest and most powerful semiconductors requires silicon and other materials of highest purity and equipment meeting the closest tolerances at the micron and submicron levels.

Semiconductor materials and equipment (SM&E) do not fit into a single SIC classification, as they include products of at least seven industries. As pointed out earlier in this chapter, the SM&E data were compiled by the Office of Business Analysis of the Economics and Statistics Administration. The SM&E industries include producers of equipment used in semiconductor manufacturing (SIC 35596), semiconductor testing (SIC 3825), and electron beam accelerators (SIC 3669) for x-ray lithography. Semiconductor materials manufacturing uses silicon ingots, wafers, and polycrystalline silicon (SIC 3339), ceramic packages (SIC 3264), lead frames (SIC 3469), sputtering targets (SIC 3499), and photo masks (SIC 3861).

Foreign direct investment in the SM&E industries is largest in the semiconductor materials industries. In 1990, U.S. affiliates producing semiconductor materials employed 6,700 workers at 32 plants. This production is concentrated in silicon wafers in plants obtained mostly through acquisitions, and in ceramic packages produced mostly in new facilities built by affiliates. Japanese-owned affiliates account for 90 percent of the foreign direct investment in this segment. European-owned firms account for the balance.

U.S. affiliates making semiconductor manufacturing equipment employed in 1990 over 3,100 workers at 26 manufacturing plants. Japanese-owned affiliates account for about 80 percent of the foreign direct investment and employment in these plants. European-owned affiliates make up the remaining 20 percent.

Although data are not available to gauge the market share of these foreign-owned facilities, it is not surprising that Japanese companies have invested in U.S. SM&E producing firms. Japan is the world's second largest market for semiconductor components and accessories, has some of the largest electronics producers in the world, and thus, represents a large market for SM&E goods. According to industry analysts, the Japanese market for semiconductor manufacturing equipment represents 50 percent of the world market.¹⁴

Country Concentration in Electronics Industry

Country ownership of U.S. affiliates shifted over the 1980s. BEA data show that Japanese firms concentrated their direct investments in computers and office equip-

ment and electronic components, and European firms, in communications equipment and instruments. Information on detailed industry groups was collected by the Office of Business Analysis, Economics and Statistics Administration, to add to that reported by BEA, to gain some insights into concentration of direct investment by country of ownership.

Country Ownership

Firms from some countries have dominated foreign direct investment in the electronics sector, and have focused their investments in specific segments of the industry, reflecting their comparative advantage and also their interest in vertical integration of their business. BEA sales data show that Japanese companies expanded their direct investment activities faster than others. Although European-owned firms continued to account for most of the sales of output by U.S. affiliates, their share of affiliates' sales declined from 61 percent in 1980 to 57 percent in 1988 (Figure 6-12). The share of sales of Japanese-owned affiliates increased rapidly from 4 percent in 1980 to 20 percent in 1988. Sales share of other countries' affiliates, including Canadian-owned affiliates, also declined.

By individual country, sales of Japanese-owned affiliates ranked first in 1988 at \$6.6 billion, followed by British-owned affiliates with sales of \$5.7 billion. The next highest sales by were affiliates owned by firms from Canada, France, Netherlands, and Germany; sales of affiliates with parents in some individual countries are not always available from BEA because of legal confidentiality requirements.

Firms from some countries have concentrated direct investments in specific segments of the electronics industry, tending to reflect their national comparative advantages, as evidenced by BEA data on sales in 1988:

- o In computers and office equipment, the BEA data show that Japanese-owned affiliates led sales, followed affiliates with parents in the Netherlands and France.
- o In household video, audio, and communications equipment, Canadian-owned affiliates led sales, followed by French- and Japanese-owned affiliates.
- o In electronic components, Japanese-owned affiliates led sales, followed by affiliates of German and Netherlands parents.

¹³National Advisory Committee on Semiconductor. *A Strategic Industry at Risk: A Report to the President and the Congress*. November 1989.

¹⁴See *U.S. Industrial Outlook, 1991*, U.S. Department of Commerce, International Trade Administration (Washington, D.C.: U.S. Department of Commerce, January 1991).

- o In instruments, U.K.-owned affiliates dominated sales, followed by affiliates of Canadian and German parents.

Industry Specialization by Countries

BEA data on U.S. affiliates' activities in the electronics sector are available at the 3-digit SIC level, up to 1988. To get more current information and additional details on industry investment (SIC 4-digit industries), including names of investing companies, another set of data was collected from diverse sources for this report. This data set collected information from industry sources on establishments or plants of the U.S. affiliates of foreign companies, and is comprised of information on 537 electronics manufacturing facilities with 202,100 workers in 1990. It also includes information on additional subindustries, semiconductor manufacturing equipment, semiconductor materials, and computer- and audio-related products, not included in the BEA data. It is not, however, scientifically collected or representative of the

universe, although it is large enough to show patterns of direct investment across industries. More complete and reliable establishment data will be available in 1992 as a result of the BEA-Census data link project.

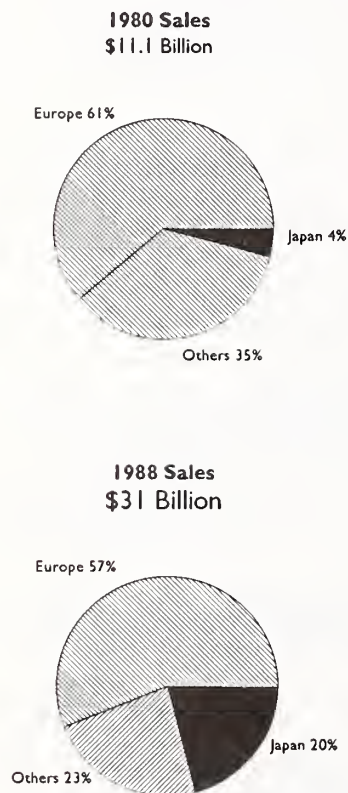
The data set on establishments and firms shows that Japanese investors have tended to invest more in smaller, start-up U.S. electronics companies, while European investors have tended to acquire larger U.S. companies. European- and Canadian-owned affiliates employed more workers (53 percent) in 1990 than all other electronics affiliates, but Japanese-owned affiliates led in numbers of plants (52 percent).

Most of the investment is concentrated in producing final electronics goods in telecommunications, computers, consumer electronics, and measuring instruments. In terms of numbers of workers, the largest subgroup of foreign direct investment was in computers and peripherals (SIC 3571-77). In 1990, U.S. affiliates in the sample operated 71 plants producing electronic computing equipment, and employed 33,000 plant workers. In telecommunications equipment, the second largest industry of foreign investment, affiliates operated 60 manufacturing facilities with over 31,000 plant workers in 1990, or 24 percent of total workers. In this sample, U.S. affiliates in household video and audio (SIC 3651) employed the bulk of plant workers. There is only one remaining U.S.-owned television manufacturer (Zenith).

All of the large foreign multinational electronics companies are involved in producing parts and components for their final products, and this group of industries has more direct investment than any single final product industry. In 1990, U.S. affiliates of foreign companies operated 136 manufacturing plants with over 58,400 workers producing electronic components (SIC 3671-79), such as printed circuit boards, capacitors, resistors, TV picture tubes, wiring assembly boards, and semiconductors. Within the semiconductor and electronic components industry (SIC 367), U.S. affiliates producing semiconductors operated the most plants (49) in 1990 and employed 18,420 workers, or about 19 percent of all U.S. production workers in the semiconductor and electronic components industry.

Foreign direct investment in electronics is dominated by the large multinational corporations of Europe, Japan, and Canada. The major European and Canadian multinational electronics firms are Philips (Netherlands); Siemens (Germany); Alcatel, Groupe Bull, and Thomson (France); and Northern Telecom (Canada). The major Japanese multinational corporations with significant U.S. investments are Toshiba, NEC, Hitachi, Fujitsu, Sony, and Matsushita. Although detailed public data are not readily available on a consistent and comprehensive company-by-company basis, available information suggests that the very largest multinationals have enhanced their market positions through links in semiconductors, components, and entertainment companies, and through horizontal links across several electronics industries. Vertical links

Figure 6-12
U.S. Electronics Industry Affiliates' Sales by
Country of Ownership



Source: Bureau of Economic Analysis.

by affiliates also extend to the semiconductor manufacturing equipment and materials industries.

Computers and Peripherals

In computers and peripherals, Japanese- and French-owned affiliates accounted for a significant share of the employment in the sample. One of the largest European investments was made by Groupe Bull (France), acquiring 85 percent of Honeywell's computer division (NEC owns 15 percent) and the computer division of Zenith Data Systems. Some of the major Japanese computer firms, such as Toshiba and NEC, have built new U.S. production facilities, and others have acquired existing U.S. computer manufacturers. Since 1989, companies from Taiwan, Korea, Singapore, and Hong Kong have also made relatively small manufacturing acquisitions.

Telecommunications Equipment

European- and Canadian-owned affiliates dominate foreign investment in the production of telephone apparatus (SIC 3661) and communications equipment (SIC 3663). Most of the major European telephone equipment companies own manufacturing facilities in the United States: Siemens (Germany), Alcatel (France), Plessey (U.K.), and Ericsson (Sweden). The Canadian firm, Northern Telecom, has major investments in U.S. manufacturing, and accounts for about 40 percent of the U.S. market sales of central office switching equipment, and an 18 percent market share in private branch exchanges (PBX) -- second only to AT&T in these markets.¹⁵ In 1989, Siemens purchased a majority interest in the then second largest U.S.-owned producer of telephone switching equipment, IBM's Rolm division.

Most of the Japanese-owned U.S. telecommunications production is concentrated in producing PBXs and cellular mobile phone equipment, although NEC and Fujitsu have some production facilities for central office switching equipment.

Consumer Electronics

In the U.S. household video and audio industry (SIC 3651) Japanese-owned affiliates in 1990 owned 26 plants, with 6 specializing in car radios for Japanese-owned auto producers in the United States. European companies have established a substantial U.S. production capacity in U.S. television production (SIC 3651) since 1985. Of the major European television companies -- Thomson (France) acquired the RCA/GE television plants, and Philips (Netherlands) manufactures Magnavox consumer electronics in the United States. Other Asian companies with U.S. television plants are Samsung (Korea) and Tatung (Taiwan).

Measuring Instruments

In instruments (SIC 38), European-owned affiliates provided a dominant share U.S. affiliates' employment of plant workers in 1990. Companies from the United Kingdom, such as Fisons and Siebe PLC have made several large acquisitions. Other European firms with U.S. manufacturing facilities include Schlumberger and Matra (France), Philips (Netherlands), Beijer (Switzerland), while ABB (Sweden-Switzerland) acquired Combustion Engineering in 1990. Japanese companies specialize in instruments for measuring and testing of electricity and electrical signals (SIC 3825).

Medical Equipment

European firms account for a significant proportion of employment in the sample for the industries producing medical equipment and supplies (SIC 3841-45), but this employment is dwarfed by the immense size of the U.S. market for health-related equipment. The major European companies with U.S. affiliates are Siemens (Germany), Philips (Netherlands), and General Electric PLC (United Kingdom); European affiliates are large producers of cardiac pacemakers. Japanese firms, such as Toshiba, focus their U.S. investment in electromedical apparatus (SIC 3845), especially the most expensive and advanced medical equipment: CAT scanners, magnetic resonance imaging scanners, and ultrasound diagnostics.

Electronic Components

Foreign direct investment by multinational corporations in the U.S. electronics sector has increased in components production, including semiconductors. The Japanese multinational firms producing electronic components in the United States (printed circuit boards, TV picture tubes, wiring assemblies) are: Toshiba, NEC, Fujitsu, Hitachi, Matsushita, and Sony. Kyocera (Japan) acquired AVX in 1989, the largest U.S. producer of electronic capacitors. The major European multinational firms producing components in U.S. facilities include Siemens and Philips. Northern Telecom of Canada also owns U.S. components manufacturing facilities.

Semiconductors

Semiconductor-producing facilities account for the largest share of U.S. affiliate employment in the electronic components category, with Japanese-owned affiliates accounting for about half of the employment in the sample data set, and many more plants than owned by U.S. affiliates of European firms. The European firms with major U.S. semiconductor manufacturing facilities are

¹⁵U.S. Department of Commerce (NTIA & ITA). *U.S. Telecommunications in a Global Economy: Competitiveness at a Crossroads*. August 1990.

Philips (Netherlands), Siemens (Germany), and Schlumberger (France).

Almost all of the larger Japanese semiconductor companies own production facilities in the United States: Fujitsu, Matsushita, NEC, Oki Electric, Mitsubishi Electric, Sony, Sanken, and Toshiba. Japanese steel companies have been investing in joint ventures with U.S. electronics companies in recent years as part of a corporate strategy to diversify into electronics and gain technical expertise in this area. Firms from other East Asian countries have made relatively small investments in the U.S. electronics industry, and include Samsung (Korea), and Hualong and Tatung (Taiwan).

Semiconductor Materials and Equipment

Japanese materials companies have dominated U.S. affiliate employment in manufacturing semiconductor test equipment and semiconductor materials-- accounting for about 80 percent of employment in the sample, mainly through acquisitions of U.S. companies. Schlumberger of France, a maker of test equipment, is a major European firm with U.S. production facilities in the equipment industries. In semiconductor materials, most of the small European-owned share is Huels AG (Germany), which acquired Monsanto's materials division--a major U.S. producer of silicon wafers.

Tapes, CDs, Computer Disks

Foreign direct investment in the U.S. magnetic recording media industry (SIC 3695) accounts for a very large share of this industry's employment-- accounting for 54 percent of total employment in the sample. Foreign direct investment in this group is dominated by Japanese companies, such as Sony and TDK, which have built new U.S. production facilities for magnetic tape and computer disks (hard and floppy). The European-owned affiliates producing magnetic recording tape include BASF, a Ger-

man chemicals company, and Philips (Netherlands) which manufactures compact disks for its U.S. record companies.

Regional Concentration of Manufacturing Facilities¹⁶

Although some investment is dispersed in 37 states, foreign direct investment in the U.S. electronics sector is concentrated in a small number of states. These states in which U.S. affiliate electronic producers are located accounted for 77 percent of their total employment and 77 percent of their plants. The largest number of plants are located in California (197) -- in 1990, accounting for the most production workers (60,825 workers) in 1990, followed by Massachusetts (30 plants and 18,415 workers). Also in the top 5 states were Florida (16 plants and 16,000 workers), Texas (25 plants and 11,000 workers), and Tennessee (9,500 workers in 10 plants).

The concentration of U.S. affiliates producing electronics in a small number of states generally parallels the pattern for the U.S. industry as a whole. California has attracted numerous acquisitions and start-ups by foreign investors because it accounts for a substantial share of total U.S. electronics manufacturing, comprising 4,630 plants and 213,000 production workers. Florida ranks second because of investments by European electronics companies, and has only one Japanese-owned affiliate. Massachusetts has attracted foreign investors because of the large concentrations of computer companies and universities in the Boston suburbs. In some states in the top ten, such as Georgia, Tennessee, and Indiana, U.S. affiliate production accounts for most of the electronics manufacturing in these states.

¹⁶Data discussed in this section were collected by the Office of Business Analysis, Economics and Statistics Administration, U.S. Department of Commerce.

FOREIGN DIRECT INVESTMENT IN THE U.S. AUTOMOTIVE INDUSTRY¹

by Donald H. Dalton*

In the 1980s, foreign automotive products manufacturers rapidly increased their sales in the U.S. market with goods produced in plants located in the United States. Foreign direct investment has rapidly increased in U.S. manufacturing of autos, trucks, tires and automotive parts and components. Foreign-owned auto manufacturing, in particular, has achieved considerable notoriety. The seven U.S. affiliate auto manufacturing operations (all either wholly Japanese-owned or jointly-owned with U.S.-owned producers) have increased from very small to over one-fifth their share of the U.S. auto production in only eight years. Nevertheless, the largest share of foreign direct investment in the U.S. automotive manufacturing industry is in parts and tires.

The increase in the number of foreign-owned plants in the United States in the 1980s has contributed substantially to the transformation of the U.S. automotive sector, through technical advance and increased productivity, including the closing of older, non-competitive U.S.-owned plants and the opening of many new U.S.- and foreign-owned facilities. Foreign ownership in the automotive sector has spilled over from autos to trucks, parts, and tires. Indeed, most of the U.S. tire industry's facilities are now owned by foreign-owned U.S. affiliates. While the major geographic concentration of both U.S.- and foreign-owned automotive plants has remained in the Great Lakes states, a substantial share has shifted to new manufacturing locations in the Southeastern states.

Bureau of Economic Analysis (BEA) data also indicate that the foreign-owned automotive manufacturing operations are spending less on research and development than U.S.-owned producers. Moreover, compared with all U.S. manufacturing affiliates, the automotive manufacturing U.S. affiliates record a large and growing overall trade deficit, particularly with their foreign parent firms, mainly due to the extensive use of imported inputs to their manufacturing operations.

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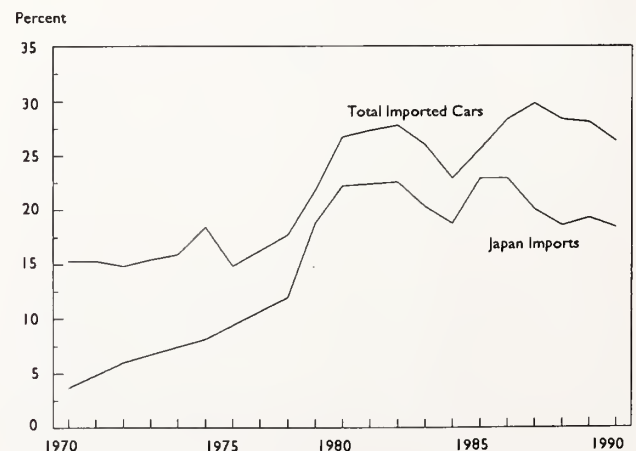
¹Foreign direct investment has been revalued from historical cost to current cost and market value bases at the aggregate level but not for individual industries. Hence, historical costs are used in the analysis.

The Rise in U.S. Imports

The United States is the world's largest market for autos, trucks, tires, and auto parts. This market is also the world's largest foreign market for foreign producers in Europe, Canada, and Asia. Their sales to this market have afforded their operations large economies of scale. In the 1970s and early 1980s foreign producers, particularly Japanese auto and tire producers, greatly expanded exports to the U.S. market. However, those large export increases generated intense trade frictions between the United States and its trading partners, especially Japan.

U.S. auto imports became an important competitiveness issue in the late 1970s, starting with the rapid expansion of their import share of the U.S. small-car market. German cars, mostly Volkswagens, were the first wave of imports in the early 1970s, but were quickly overtaken in the late 1970s by a surge of small cars from Japan. The import share of U.S. new car sales increased rapidly from 15 percent in 1970 to 27 percent in 1980 (Figure 7-1). Japanese-produced autos now dominate the U.S. import market, rising from 4 percent of U.S. sales in 1970 to 22 percent in 1980, and roughly stabilizing at that

Figure 7-1
Japan Dominant Supplier of U.S. Imported Auto Sales Since 1978



Sources: *Wards Automotive Reports*, and U.S. Department of Commerce, Office of Automotive Affairs.

level thereafter. The Japanese began voluntary restraints on exports of autos to the United States in 1981, and this appears to have restrained their market share.

The Japanese restraints on autos exported to the United States are frequently cited as the cause of the shift in the composition of imported Japanese autos toward more expensive, and more profitable, models and as having played a major role in the decision of Japanese auto producers to invest in U.S. auto production facilities. However, these events might have occurred in any case as a natural extension of the shift to higher value-added output and the rising cost of production in Japanese plants.

Establishing U.S. affiliates was the most expeditious means for Japanese auto producers to circumvent the sales limits set by the VRAs. U.S. production also helped free-up the intra-company rigidity in U.S. market shares imposed by the Japanese government allocations under the restraints. The risk of expanding production to the United States was greatly reduced by the Japanese companies' already well established U.S. retail and wholesale distribution networks and strong U.S. consumer acceptance of their products. By 1990, six Japanese auto producers owned seven U.S. auto manufacturing affiliates, including their joint production with U.S. producers.

The rise of Japanese auto production in the United States in the 1980s created additional trade frictions that spilled over from the large rise in those plants' use of Japanese-produced imported parts. Auto parts had already become a sensitive issue because of the U.S. automotive parts producers' difficulty in obtaining certification by Japanese auto producers as authorized suppliers of repair and replacement parts for Japanese brand autos. Auto parts became an increasingly important component of total U.S. automotive imports from Japan, shifting from 14 percent of the total in 1983 to 32 percent in 1989. The new trade friction in automotive parts led to their selection as one of the industries for the annual Market-Oriented Specific-Sector (MOSS) talks with Japan, which began in 1985. Partly in response to trade frictions over U.S. auto parts imports and U.S. industry complaints about lack of U.S.-produced content, a wave of U.S. investment by Japanese auto parts producers occurred in the second half of the 1980s.

Industry Scope

This chapter covers all foreign-owned affiliates in the United States that mainly manufacture automotive products. It does not cover affiliates that mainly wholesale automotive products. A key problem impairing analysis of U.S. foreign-owned affiliates in the automotive sector is the definition of the automotive parts and accessories sector. BEA data on U.S. affiliates in this sector are restricted to enterprises whose principal business is motor vehicles and accessories production under Standard Industrial Classification (SIC) 371. However, the actual scope of the industry is far larger, including the very large

number of U.S. affiliates mainly producing products for use in motor vehicles, such as tires, stampings, windows, bearings, seats, air conditioners, and other parts, but classified in BEA data under other SIC groups.

Prior to 1988, except for benchmark years, the BEA data also do not, for enterprises that are mainly wholesalers, differentiate between their establishments engaged mainly in wholesaling and those mainly in production. For example, the principal business of two major Japanese-owned U.S. affiliates is the wholesaling of autos (including imported autos). As a result, the BEA data on U.S. affiliates in the automotive manufacturing industry exclude the manufacturing portion of these two enterprises and substantially understate the actual operations of all U.S. affiliates producing autos. In the benchmark surveys and from 1988 onward, BEA has been collecting data by industry of sales that distinguish between wholesaling and manufacturing, but has not been publishing the data cross-classified by industry of affiliate at a detailed industry level. An additional problem is that the BEA data on U.S. affiliates included in that industry provide no disaggregation between U.S. affiliates producing autos and those producing auto parts.

The effect of the characteristics of the SIC classification system, the composition of the affiliates manufacturing versus wholesaling operations, and the restriction on publishing data to avoid disclosure of individual businesses' operations on the availability of BEA data on the sales by the automotive manufacturing industry is illustrated for 1988 in Table 7-1. Completion of the data link project will help reduce these problems.

The following sections on the automotive manufacturing industry that are based on BEA data reflecting the narrower SIC definition of the motor vehicle and equipment industry (SIC 731) are so noted. Where feasible, the following sections also discuss the operations of this industry on the basis of a broader data base compiled by the Office of Business Analysis (OBA) of the Economics and Statistics Administration, and are so noted.

U.S. Affiliates' Growth

The stock of investment in property, plant and equipment by U.S. automotive manufacturing affiliates (according to BEA data) grew rapidly from \$1.4 billion in 1980 to \$4.0 billion at the end of 1988 (Figure 7-2).² Investment by Japanese-owned firms has dominated the total, and by 1988 their share of the total annual investment by U.S. automotive manufacturing affiliates reached 85 percent and their share of the accumulated stock of the affiliates total investment reached 67 percent.

U.S. affiliates' automotive manufacturing sales (according to BEA data on an industry of sales basis) increased from \$6.7 billion in 1980 to \$16 billion in 1988,

²PP&E data are based on historical book value, and may understate their current market value.

Table 7-1
Selected BEA Data on Sales of Motor Vehicles & Equipment in 1988
By U.S. Foreign Owned Affiliates, By Industries Of Affiliate & Sales
(In billion dollars)

Industry of Sales	All Industries	Industry of Affiliate				All Other
		"Other Manufacturing" Total	Of Which Motor Vehicles & Equipment Manufacturing	Total	Wholesaling Of Which Motor Vehicles & Equipment Wholesaling	
All industries	853.3	76.2	7.2	309.7	83.7	467.4
Motor vehicles & equipment manufacturing (SIC 371)	15.9	6.4	*	8.8	*	0.7
Other motor vehicle equipment manufacturing	*	*	*	*	*	*

* Not published. Source: Bureau of Economic Analysis.

and accounted for 7.3 percent of the total U.S. automotive manufacturing industry's sales in 1988 (Figure 7-3). Sales by these U.S. affiliates increased faster than employment in automotive manufacturing in the 1980s, partly because the new auto facilities of the affiliates relied heavily on imported parts.

In 1988, sales by Japanese-owned affiliates reached \$8.6 billion, and accounted for over one-half (54 percent) of the total U.S. affiliates' automotive sales, followed by German-owned affiliates at \$2.4 billion (8 percent) and French-owned affiliates third.

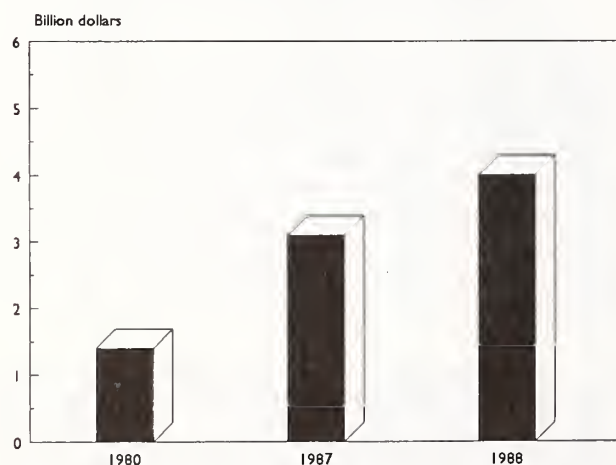
U.S.-produced content. Many observers are concerned over the extent that U.S. affiliates rely on use of imported inputs in the production of their output. Japanese-owned affiliates have been increasing the U.S.-produced content of their U.S. production, according to

the U.S. General Accounting Office.³ The GAO report also indicates that the U.S.-content share of output by Japanese-owned U.S. auto affiliates increased by one-fourth in one year -- from 38 percent in 1988 to 50 percent in 1989. This share was still far below the U.S.-content in U.S.-owned auto plants, which averaged 88 percent in 1989.

U.S. affiliates' employment in U.S. automotive manufacturing (according to BEA data on industry of sales basis) appears to have only varied little during the 1980s -- reaching 64,000 in 1988, up only slightly from 59,000 workers in 1980 (Figure 7-4). The reported number of workers employed by these U.S. affiliates equalled 7.5

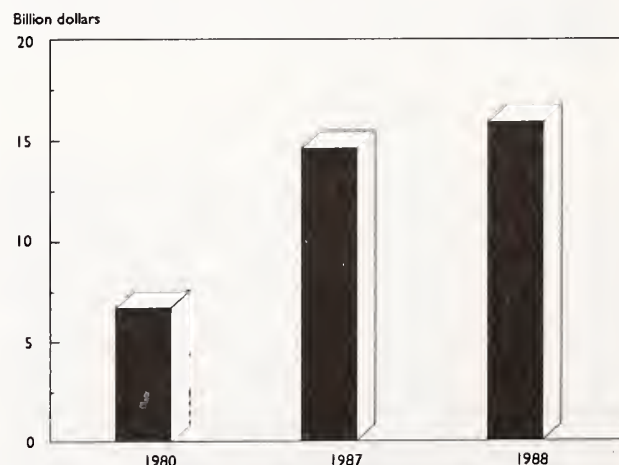
³U.S. General Accounting Office. *Foreign Investment: Japanese-Affiliated Automakers' 1989 U.S. Production's Impact on Jobs*. Washington, D.C., October 1990.

Figure 7-2
U.S. Automotive Manufacturing Affiliates' Stock of PP&E Investment



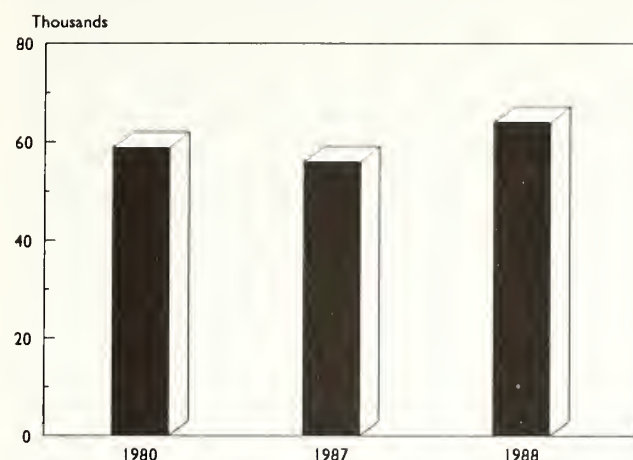
Source: Data by industry of affiliate, Bureau of Economic Analysis.

Figure 7-3
U.S. Affiliates' Automotive Manufacturing Sales



Source: Data by industry of sales, Bureau of Economic Analysis.

Figure 7-4
U.S. Affiliates' Employment in Automotive Manufacturing



Source: Data by industry of sales, Bureau of Economic Analysis.

percent of the industry's total employment in 1988.

In 1988, (according to BEA data) Japanese-owned companies employed 23,100 workers, accounting for one-third of the total employed by all U.S. automotive manufacturing affiliates -- more workers than in any other nation's U.S. automotive manufacturing affiliates. The next largest groups -- German-owned and United-Kingdom-owned affiliates -- each employed about 11,000 workers.

Wages. In 1988, total compensation paid by U.S. automotive affiliates to U.S. workers reached \$1.4 billion (according to BEA data). Compensation per employee averaged \$40,100, substantially above the \$33,700 average paid by all U.S. affiliates in all manufacturing industries, but less than the \$44,550 average paid by all U.S. automotive manufacturing companies (Figure 7-5). However, the average wages in the BEA data for U.S. affiliates are likely reduced by the relatively high proportion of lower-paid wholesaling employees included compared to U.S. automotive manufacturing companies.

U.S. Affiliates' Concentration by Product Sector

The following sections are based on OBA data obtained directly from published automotive industry sources.

Autos

The role of U.S. affiliates in U.S. auto production and sales has increased rapidly since the mid-1980s, with the rapid rise in the number of Japanese-owned U.S. auto producers. Honda began U.S. auto production in 1982 (for sale in 1983), Nissan in 1985, the Toyota-GM joint venture

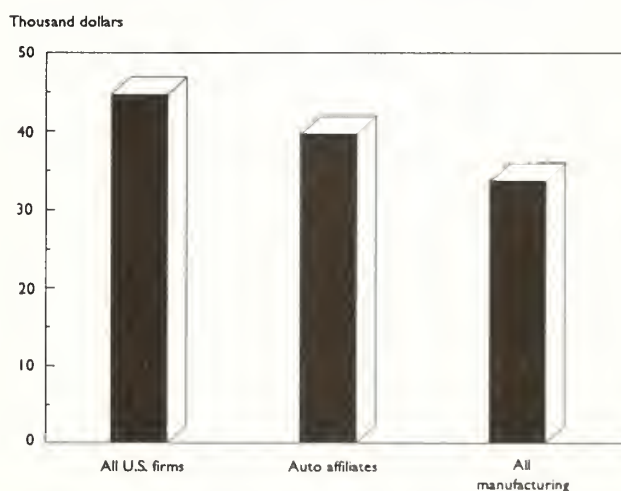
Table 7-2
U.S. Auto Production
(In thousands of passenger cars)

Company	1987	1990
U.S.-owned:		
General Motors	3,603	2,653
Ford	1,830	1,377
Chrysler	1,109	726
U.S. affiliates:		
Volkswagen	65	0
Honda	324	435
NUMMI	44	204
Nissan	117	95
Toyota	0	211
Mazda	4	184
Subaru-Isuzu	0	32
Diamond Star	0	148
Total, all producers	7,097	6,069
U.S.-owned	5,543	4,757
U.S. affiliates	554	1,312
U.S. affiliates' share (percent)	7.8	21.6

Note: NUMMI is a GM-Toyota joint venture. Diamond Star is a Chrysler-Mitsubishi joint venture.

Source: *Ward's Automotive Reports*.

Figure 7-5
U.S. Automotive Affiliates' Average Annual Compensation per Employee Higher than other U.S. Affiliates, but Lower than All U.S. Automotive Manufacturing in 1988



Sources: Bureau of Economic Analysis and Bureau of the Census.

NUMMI plant in 1986, Mazda in 1987, Mitsubishi in 1988, the Toyota wholly-owned plant in 1988, and Subaru-Isuzu in 1989. In 1988, Volkswagen closed its Pennsylvania assembly plant, after only ten years of operations.

The U.S. affiliates' share of U.S. auto production (including production in plants jointly owned with U.S.-owned auto producers) rose rapidly from 7.8 percent in

1987 (including Volkswagen), to 16.5 percent in 1989, and 21.6 percent in 1990 (according to *Ward's Automotive Reports*) (Table 7-2). In addition, Japanese-owned affiliates accounted for 19 percent of total U.S. production of pick-up trucks in 1990; they also produced light and heavy-duty trucks.

According to the Japan Automobile Manufacturers Association, Japanese investment in U.S. auto production facilities reached \$6.4 billion in 1989, and by the end of 1990 those U.S. facilities employed 26,653 workers. Several of those Japanese auto companies have announced future expansions in the United States.

Auto Parts and Tires

A survey of available sources by OBA indicates that U.S. affiliates mainly producing vehicles and automotive parts are accounted for under 50 separate 4-digit SIC industries. This survey found that in 1990, for the foreign-owned plants identifiable by industry of output, 75 percent of the production workers and 96 percent of the plants in the automotive manufacturing sector are those producing automotive parts. Moreover, of the estimated total number of U.S. affiliates' 416 auto parts plants (with 126,640 workers), 57 percent were Japanese-owned, while European and Canadian plants accounted for 58 percent of the total employment.

During 1985-90, Japanese auto parts and tire manufacturing companies were attracted to the United States by the growing presence of Japanese auto companies in this country and the sharply reduced relative cost of purchasing U.S. facilities resulting from the post-1984 dollar depreciation. During these 5 years, Japanese auto parts companies built or acquired an additional 200 plants. Many of these were small, start-up companies which partly accounts for the large number of plants relative to their number of employees in 1990.

In contrast, European and Canadian direct investment in the U.S. automotive parts and tire manufacturing industry began decades ago and has increased only slowly. To gain entry into the U.S. market, they tended to acquire large, existing, established U.S. auto parts firms.

U.S. affiliates are widespread in most of the 50 separate auto parts producing industries. The largest concentration of U.S. affiliates, in terms of employment, is in the U.S. tire industry, with even more workers than are employed in affiliates producing autos. In 1990, U.S. affiliates producing tires employed 39,300 workers at 29 plants, with European-owned tire producers employing 60 percent of those workers at 55 percent of the plants. Moreover, U.S. affiliates appear to dominate U.S. tire production -- employing 62 percent of all U.S. production workers in the U.S. tire industry.

After tires, the top ten industries in which U.S. automotive affiliates are located (in terms of employees) are stamping, glass, bearings, seats, automotive electrical equipment, auto air conditioners, engine parts, rubber

parts, and plastic parts.

Considerable concern has been expressed by U.S.-owned auto parts producers about vertical linkage between U.S. affiliates producing autos and those producing auto parts, particularly between Japanese-owned firms. Detailed public data are not readily available on a consistent comprehensive company-by-company basis to clearly identify the extent of such linkage. Nevertheless, such information as is available suggests there is some vertical linkage between Japanese-owned U.S. affiliates that appears to somewhat parallel that in Japan, as it appears to extend upstream to various U.S. parts producers and is clearly linked downstream to U.S. auto wholesalers.

Japanese-owned U.S. automotive manufacturing operations increased from 39 in 1984 to 276 in 1990 (Figure 7-6). By 1989, of the total 168 Japanese-owned U.S. affiliates producing automotive parts, over 40 percent (69 U.S. affiliates) were owned by Japanese parent auto companies. Moreover, the 99 "independent" Japanese-owned U.S. automotive parts affiliates tended to have long-term supplier relationships with the parent Japanese auto producers in Japan.⁴

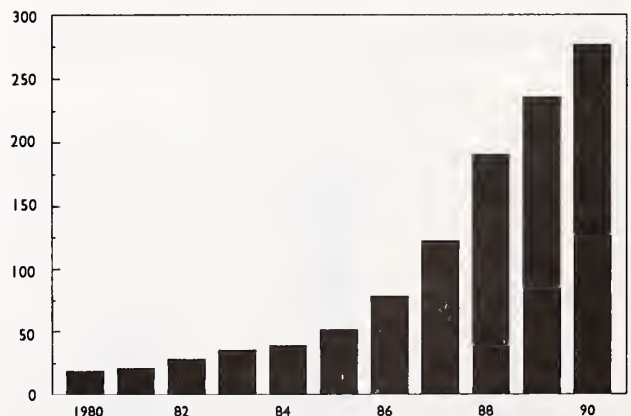
Technology Progress

Technology Transplants

Some of the Japanese-owned U.S. automotive affiliates have contributed to U.S. productivity growth by bringing to the United States the world's "best practices" production technology -- in effect transplanting technology. Because Japanese-owned plants are newer than U.S.-

⁴Phyllis A. Genther and Donald H. Dalton. *Japanese Direct Investment in U.S. Manufacturing*. U.S. Department of Commerce, Washington, D.C., June 1990.

Figure 7-6
Number of Japanese-owned Automotive Plants
Rose Rapidly in the 1980s



Sources: U.S. Department of Commerce, *Japanese Direct Investment in U.S. Manufacturing*, June 1990.

owned plants, their state-of-the-art production processes tend to be more efficient than those in most older U.S.-owned and other foreign-owned U.S. plants.

R&D Spending

In contrast to their contribution through transplanted technology, spending on research and development by U.S. automotive affiliates (according to BEA data) has lagged well behind that by U.S.-owned automotive producers. Notwithstanding the U.S. affiliates' substantial share of total U.S. auto production, they spent only \$50 million on R&D in 1988, compared to \$7.3 billion by all U.S. automotive companies (according to the National Science Foundation) (Figure 7-7). Moreover, the 1988 spending by U.S. automotive affiliates was only slightly more than one-half the nearly \$90 million level they spent in 1980.

Critical Technologies -- Robotics

A number of key critical technologies are embodied in the production equipment and in the parts and components used in the production of autos. Among these are robotics, electronics, and new materials. The advent of, and intense competition afforded by, both imported and U.S.-produced foreign brand autos appeared to strongly influence the timing, speed and extent to which U.S.-owned auto producers adopted and embodied the use of these technologies. Also influencing their adoption were government gas economy and pollution standards.

Robot technology is one of the 12 critical emerging technologies identified by the U.S. Department of Commerce Technology Administration. The rapid acceleration in the U.S. automotive industry's adoption of robotics technology in automotive production was highly moti-

vated by the need to reduce costs and improve quality of output. The automotive industry is the largest world-wide user of industrial robots, accounting for about 50 percent of all U.S. robot installations.⁵

While the U.S. robotics industry has depended on sales to the auto industry to support early technical developments, the dramatic growth in the U.S. automotive industry's demand for robots has been supplied primarily by imports. The stock of robots installed in all U.S. industries rose dramatically from about 6,000 in 1981 to 39,000 in 1990. However, of the 3,300 additional robots installed in the U.S. plants in 1990, only about 19 percent were assembled in the United States, and most of those were assembled from imported mechanical components. The U.S.-produced contribution to U.S. robot assembly is now largely limited to supplying controllers, sensors, and software. In 1989, of the total number of robots assembled in the United States, probably less than one-tenth (about 200) were installed in automotive plants. Moreover, about nine-tenths of the robots installed in U.S. automotive plants in 1989 were foreign-produced.

The advent of Japanese-owned U.S. auto plants may not have contributed significantly to the failure of U.S. robot producers to capture a large share of the dramatic growth of the U.S. auto production requirements for robots. Foreign robot production, particularly Japanese produced robots, has amply demonstrated a dominant price and reliability competitiveness edge in supplying robots not only to Japanese-owned, but also to U.S.-owned auto plants. Indeed, GMF Robotics, a joint venture with production facilities in Japan between General Motors and Fanuc of Japan, is the predominant supplier of robots to GM's auto assembly plants.

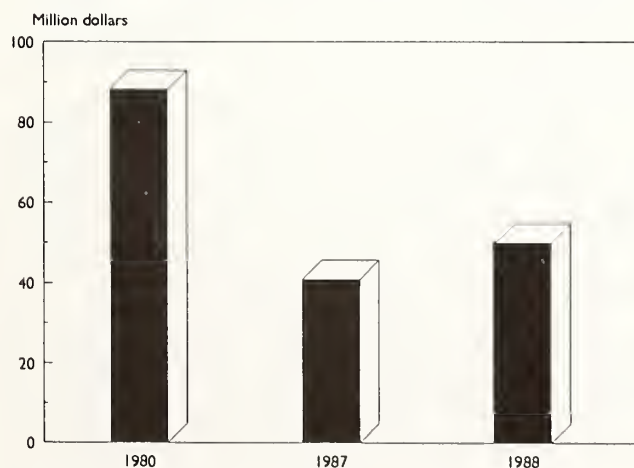
The 60 to 70 U.S. robotics companies are relatively small compared to similar Japanese companies, and specialize in the advanced technologies for sensors and manufacturing software. The sensors are used in robot arms for vision, heat detection, and proximity. U.S. companies also produce the world's most advanced and creative computer software for linking robots and machine tools on the factory floor. Moreover, nearly all of the U.S. robotics companies have established international cooperative arrangements with foreign robot producers to reduce risk, share development costs, and expand markets.

National Ownership Concentration

U.S. affiliates in the automotive sector have tended to concentrate, depending on their country of ownership, in particular product sectors. All U.S. affiliates now producing autos are Japanese, as Volkswagen closed its Pennsylvania plant in 1988, and Renault sold its equity position in American Motors to Chrysler in 1989.

Figure 7-7

U.S. Automotive Mfg. Affiliates' R&D Spending



Source: Bureau of Economic Analysis.

⁵Page 39, in U.S. Department of Commerce, Bureau of Export Administration, Office of Resource Administration, Strategic Analysis Division. *National Security Assessment of the U.S. Robotics Industry*. Washington, D.C., March 1991.

Trucks

U.S. affiliate production of large trucks is dominated by European companies, while Japanese companies specialize in pick-up trucks. Renault of France has had a direct interest in Mack trucks since the late 1970s and gained full control of the firm in 1990, while Volvo of Sweden acquired White Consolidated truck division in 1981 and formed a joint venture with General Motors to manufacture "class 8" trucks in 1988, and Daimler Benz of Germany acquired Freightliner in 1981.

European companies from Sweden, France, and Germany became U.S. producers through acquisition of integrated U.S. heavy-duty truck assembly and parts manufacturing. Japanese companies have constructed new U.S. truck assembly plants, but rely on U.S. contractors for most of their truck parts and import their truck engines from Japan. Nissan and Subaru-Isuzu built new U.S. facilities to manufacture pick-up trucks, and in 1990 accounted for nearly 20 percent of total U.S. production of light trucks (according to *Ward's Automotive Reports*).

Tires

French, German, and Italian companies account for most of the U.S. affiliate production of tires. Michelin (France) built five U.S. manufacturing facilities in the 1980s, and in 1990 acquired Uniroyal-Goodrich. Other acquisitions of U.S. tire companies in the 1980s include Continental AG's (Germany) purchase of General Tire, and Pirelli's (Italy) purchase of Armstrong. Since 1987, Japanese tire companies have purchased Firestone, Mohawk, and Dunlop UK and its U.S. subsidiary.

Table 7-3
U.S. Tire and Auto Parts Producing Affiliates in 1990

Country of Ownership	Plants	Production Workers
Tires:		
Total	29	39,400
Japan	12	15,258
Europe	17	24,150
Canada	0	0
Parts:		
Total	386	87,240
Japan	225	37,992
Europe	143	24,150
Canada	18	3,060

Source: U.S. Department of Commerce, Economics and Statistics Administration, Office of Business Analysis.

Automotive Parts

U.S. parts-producing affiliates of some nations are highly concentrated in some auto parts industries. For example, with the acquisition of Libby Owens Ford's automotive glass division by Pilkington Brothers PLC, the U.K.-owned affiliates specialize in windows; Japanese-owned affiliates have also focused on glass production. Auto seat production is dominated by Luxembourg- and Japanese-owned plants. U.S. affiliates in automotive stamping are mainly Canadian- and German-owned, while bearings are mainly produced by Swedish- and Japanese-owned plants.

Japanese-owned plants account for nearly all of the affiliates' production of auto air conditioning, auto audio equipment, plastic parts, and safety equipment. German-owned affiliates, such as Robert Bosch, have concentrated on fuel-injection systems, and account for nearly all of the foreign-owned U.S. production of pistons, valves, and water and fuel pumps. U.K.-owned affiliates have also concentrated on automotive pollution controls through acquisition of the Robert Shaw Controls division.

The European-owned plants tend to be larger plants with more workers and the Japanese-owned plants tend to be smaller start-up plants (Table 7-3).

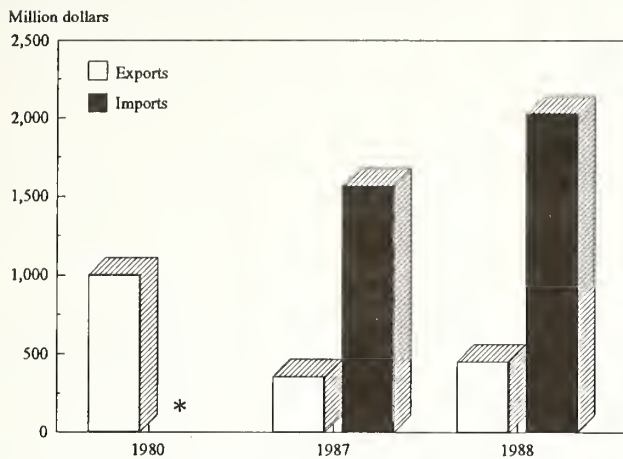
State Location of U.S. Affiliates

U.S. automotive affiliates are heavily concentrated in the large automotive states in the Mid-West, such as Michigan, Ohio, and Indiana, although at least some are in a total of 34 states. In 1990, most U.S. affiliates were in the seven states with foreign-owned, or joint U.S.-Japanese-owned auto or truck assembly plants, with 67 plants in Ohio employing 22,540 production workers, followed by Tennessee with 44 automotive plants employing 17,595 workers. Both of these states had large Japanese auto assembly plants, which attracted large numbers of Japanese-owned auto parts suppliers that provide "just-in-time" delivery. Over 70 percent of the Japanese automotive foreign direct investment was in Ohio. The Toyota plant in Georgetown, Kentucky also attracted foreign-owned suppliers, with Kentucky ranking fifth largest in foreign-owned automotive investment.

Large European investments are in South and North Carolina, with South Carolina ranking fourth among states in automotive foreign direct investment, primarily due to Michelin's four large tire plants, two auto parts plants owned by Robert Bosch of Germany, and the relocation of Renault-owned (France) Mack truck headquarters.

Some states, such as Kentucky, Tennessee, and South and North Carolina attract foreign investment because of lower wage costs, partly because of less unionization of workers. These states also have offered significant incentives to recruit foreign-owned manufacturing plants.

Figure 7-8
U.S. Automotive Manufacturing Affiliates
Strongly Increase Imports



Note: Imports in 1980 are not published to avoid disclosure of individual companies' operations.

Source: Bureau of Economic Analysis.

Merchandise Trade

According to BEA data, U.S. imports by U.S. automotive manufacturing affiliates have risen sharply to \$1.6 billion in 1987 and \$2.0 billion in 1988 from that in 1980 when the number of reporting enterprises was too small to allow publication by BEA (Figure 7-8). Moreover, the actual imports by all U.S. automotive manufacturing affiliates in 1988 was probably much higher than reported by BEA data, as those data exclude imports by two major

U.S. affiliates assembling autos that are classified as wholesalers.

Japanese-owned enterprises account for most of the U.S. imports by U.S. automotive manufacturing affiliates. U.S. Bureau of the Census trade statistics on U.S.-Japanese automotive trade show a decline in imports of vehicles in recent years, as affiliates increased their U.S. production, but this decline in auto imports has been offset by a far larger increase in imports of auto parts.

Japanese purchases of U.S. tire companies, such as Firestone, also appears to have facilitated imports, as the acquisition of their U.S. retail distribution networks provides a direct outlet for sales of Japanese-made tires. Imported tires may also be installed on Japanese brand autos assembled in the United States. Imports of Japanese-produced tires have risen over 50 percent since 1986.

In contrast to imports, exports by U.S. automotive manufacturing affiliates were far lower in 1987 (\$360 million) and in 1988 (\$450 million) than the \$1.0 billion exported in 1980. Moreover, in 1988, exports by U.S. manufacturing affiliates were small relative to their total sales (2.8 percent) and relative to total U.S. automotive exports of \$25.9 billion (3.9 percent). Indeed, the export share of their sales was far smaller than the export share of the total U.S. automotive sector's sales (12 percent).

On balance, the U.S. automotive manufacturing affiliates have had a rising trade deficit, reaching \$1.2 billion in 1987 and \$1.6 billion in 1988. Most of their imports are from their parent firms, while virtually none of their exports are to their parents. As a result, the trade deficit with their parents is larger than their overall deficit, reaching \$1.4 billion in 1987 and \$1.7 billion in 1988.

FOREIGN DIRECT INVESTMENT IN THE U.S. STEEL INDUSTRY

by John T. Harrington

Rapidly rising foreign direct investment in the U.S. steel industry in the 1980s occurred during considerable restructuring within the industry and imposition of new U.S. steel import restrictions. By 1988, U.S. affiliates of foreign firms held interest in approximately 15 percent of the U.S. steel industry, as measured in terms of sales volume, compared to only about 5 percent in 1980. The rate of foreign purchases appears to have peaked in the mid 1980s, although occasional acquisitions continue to occur. The bulk of this foreign investment has occurred in downstream facilities--specialized milling or alloy plants -- where proximity to the customer is increasingly important and, in many cases, is on a joint venture or partnership basis. Japan replaced Europe as the major foreign investor in the U.S. industry during this period--each major Japanese steel firm made investments in the United States -- while major French and Korean steelmakers also made significant acquisitions.

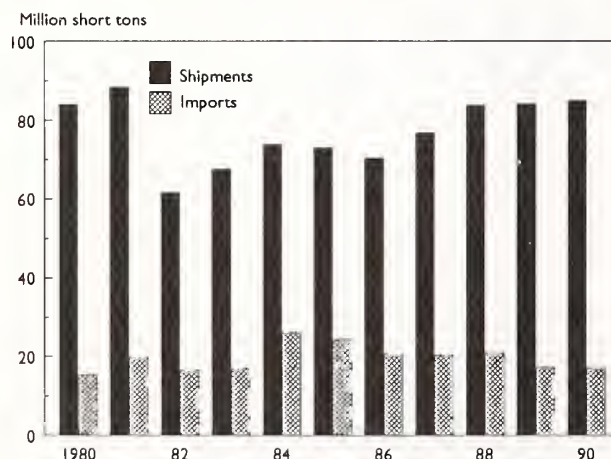
The U.S. steel industry¹ faced very difficult financial conditions in the early 1980s. Beset by a recession fostered decrease in aggregate U.S. demand for steel,

world-wide overcapacity, and continued strong U.S. steel imports during this period (Figure 8-1), the U.S. steel industry accumulated net operating losses of \$11.6 billion from 1982 through 1986.² By the end of 1985, 20 percent of U.S. steel making capacity was owned by companies operating under bankruptcy protection. Employment plunged from 512,000 in 1980 to only 277,000 in 1988 (Figure 8-1).

The huge losses suffered by the industry lowered credit ratings and damaged investor confidence. In particular, the large integrated manufacturers that manufacture raw steel out of iron ore could raise little of the investment capital needed to upgrade their facilities to levels technologically competitive with foreign firms. Credit that was obtained on the bond market came at high interest rates, in many cases exceeding 15 percent on an annual basis.³

As a result of the industry's poor earnings and its difficulty in raising capital, investment in plant and equipment fell from \$2,650 million in 1980 to only \$862 million in 1986, leaving the industry starved of capital and with an aging technological base.⁴ Considerable investments have been made since then and many older plants have been shut down, rationalizing the industry and enhancing its competitiveness. Even so, one American steel executive in 1990 still placed industry capital requirements at between \$10 and \$15 billion, for the industry to regain a competitive position in world markets.⁵

Figure 8-1
Total U.S. Steel Mill Product Shipments and Imports, 1980-90



Source: American Iron and Steel Institute and U.S. Department of Commerce.

*Industry Analyst in the Office of Metals, Minerals and Commodities, Trade Development, International Trade Administration.

¹The steel industry is defined in this report under SIC code 331 as blast furnaces and steel mills and manufacturers of ferro-alloys and non-ferrous alloys by electrometallurgical processes, steel wire and nails, cold-rolled steel, and steel pipe and tube.

Foreign direct investment has been revalued from historical cost basis to current cost and market value bases at the aggregate level but not for individual industries. Hence, historical costs are used in the analysis.

² 1989 Annual Statistical Report (Washington: American Iron and Steel Institute, 1990), p. 7.

³ David J. Cantor, "Foreign Direct Investment in the U.S. Steel Industry," *Foreign Direct Investment Effects on the United States*, Committee on Banking, Finance and Urban Affairs, House of Representatives, (Washington: U.S. Government Printing Office, 1989) p. CRS-106

⁴ American Iron and Steel Institute, p.12

⁵ George W. Hess, "Federal Budget Deficit tops AISI's List," *Iron Age*, July 1990, p. 8.

Motives for Foreign Investment in the United States

The difficulties faced by U.S. steel producers in the early 1980s led them in many circumstances to seek outside capital and technology, according to a survey conducted by the International Trade Commission in 1989.⁶ Foreign steel companies, moreover, could see important advantages in owning production and processing facilities in the United States. These perceived advantages included:

- o **Size and accessibility of the U.S. market.** The United States is the second largest consumer of steel after the Soviet Union, and thus an important market for gaining economies of scale, diversifying risks, stabilizing earnings across borders, and exploiting firm-specific competitive advantages in technology and capital.
- o **U.S. import restrictions.** After 1984, when the United States began negotiating voluntary export restraint agreements (VRAs) with major steel exporting countries, foreign steel exporters realized that U.S. based production facilities would ensure their access to the U.S. market.
- o **Instability of the dollar.** The large swings in the relative values of international currencies and in energy and raw material prices in the early through mid 1980s, demonstrated the need for foreign steel producers--especially Japanese firms which import virtually all of their coking coal and iron ore requirements--to reduce risks by investing in production facilities in the U.S.
- o **Rising overseas production costs.** European and Japanese integrated steel firms face constraints on expansion in their home markets, including rising labor costs, escalating wage rates, high land and energy prices, and environmental controls, all of which have increased their production cost structure at home relative to the United States.
- o **Customer service requirements and technology advances.** Foreign firms recognize that increasing demands from steel consumers for customized products--made economically possible by computer aided manufacturing and design -- is shifting the industry from a producer-oriented, price-based commodity market to one with a stronger customer orientation, better served

by local plants, which can better guarantee a stability of supply.

- o **Relocation to the United States of long term clients.** New U.S. facilities built by foreign firms, especially in the steel-intensive automobile sector, have drawn associated foreign steel suppliers to follow with investments in the United States. Foreign steel companies have been prompted to follow traditional customers to the United States either at the urging of compatriot firms who want a supplier familiar with their products requirements or in order to regain steel sales lost in domestic markets.

Foreign Direct Investment Growth

Foreign direct investment in the U.S. steel industry has increased markedly over the past decade and has been a major source of capital for the U.S. industry. Whether measured in terms of plant value, sales, or employment, the foreign affiliated share of U.S. steel production rose from 3-5 percent in 1980 to 15-18 percent in 1988. Foreign firms control less of the U.S. industry, however, considering that a large number of these affiliates are jointly owned with U.S. firms.

Gross Property, Plant, and Equipment

Gross property, plant, and equipment (PP&E) of steel-making affiliates of foreign companies in the United States was assessed at \$1.7 billion in 1980 at historical book value, or about 6 percent of total domestic steel industry PP&E, according to BEA and Bureau of Census data.⁷ By 1988 this value had increased to \$6.2 billion, or 17 percent of the Census compiled total of \$36.4 billion. (Figure 8-2).⁸

Japanese-owned U.S. steel affiliates held \$3.2 billion in gross PP&E, about 9 percent of the U.S. industry total. European-owned affiliates held \$919 million in PP&E, less than 3 percent of the industry total.

Excluding property, by 1988, U.S. affiliates owned \$6.2 billion in plant and equipment assets, or approximately 17 percent of a total \$35.3 billion in book value of plant and equipment at the end of 1988 for the entire steel industry.

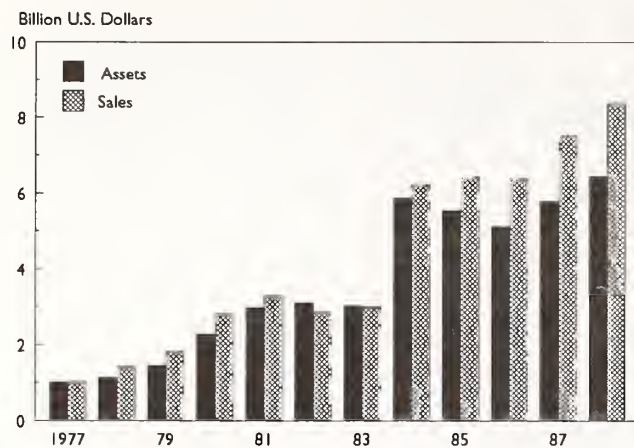
Another indication of the growth in foreign direct investment in the U.S. steel industry is represented by the cumulative value of net foreign capital transferred to the U.S. based affiliates from their overseas parents. This

⁶U.S. *Global Competitiveness: Steel Sheet and Strip Industry* (Washington: United States International Trade Commission, January 1988), Chapter 11, p. 13.

⁷As PP&E data are based on historical book value, they may be understated in current market terms.

⁸*Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations* (Washington, Bureau of the Census, Department of Commerce, various issues) pp. 34-36.

Figure 8-2
U.S. Steel Affiliates' Total Assets and Sales, 1977-88



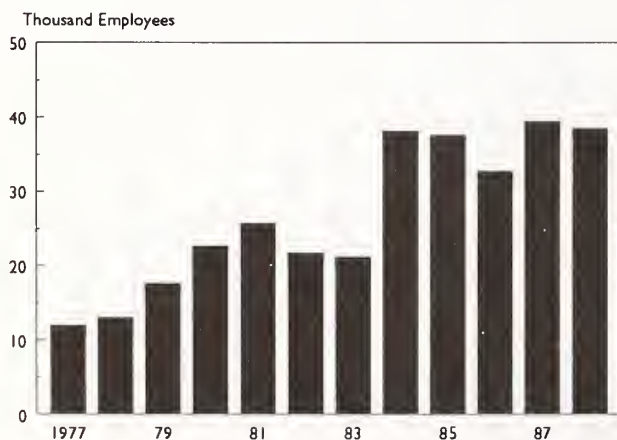
Source: Bureau of Economic Analysis.

grew from \$554 million in 1980 to \$2,927 million in 1989.⁹

Sales

Steel sales by U.S. affiliates of foreign companies increased more than three times from \$2.8 billion in 1980 to \$9.5 billion in 1988. Relative to total U.S. steel sales, the foreign companies in 1988 held roughly 17 percent of U.S. steel industry sales of \$54.5 billion, up from only 3.5 percent of industry wide sales of \$78.0 billion in 1980. If over \$1 billion in sales by two companies with foreign parents in Bermuda and the Netherlands Antilles that are ultimately owned by U.S. firms are excluded in 1988, foreign affiliate market share of industry sales was approximately 15 percent in 1988.¹⁰

Figure 8-3
U.S. Steel Affiliates' U.S. Employment, 1977-88



Note: Industry of affiliate basis.

Source: Bureau of Economic Analysis.

Employment

In 1988, U.S. affiliates of foreign companies employed 51.5 thousand workers in the manufacture and sale of steel, of which 38.4 thousand worked for affiliates whose primary business was in the steel manufacturing. This represents a 70 percent increase since 1980 but the majority of the increase occurred in 1984 alone. Employment by the affiliates remained static after 1984. Of 277,000 U.S. workers in 1988, foreign affiliates accounted for about 18 percent, versus 5 percent in 1980 when industry employment averaged 512,000 workers.¹¹

Wage rates for employees of U.S. affiliates of foreign companies in the steel industry are generally comparable to or higher than the average for the industry. According to BEA data, in 1988 the annual salaries and wages of all employees of U.S. steel affiliates averaged \$33,541. Although not wholly on the same basis, this rate compares with an average of \$31,963 for production workers in the industry as a whole. Only about 54 percent of the employees of the U.S. based affiliates--21,000 out of 39,300 in 1987--were covered by collective bargaining agreements, however, compared to 76 percent for the industry as a whole--an estimated 155,000 out of 202,900 (Figure 8-3).¹²

Employment by U.S. steel industry affiliates is mainly concentrated in the Great Lakes states (which had one-third of the total in 1988), and in the individual states of Pennsylvania, California, and Georgia.

Sources of Investment Growth

BEA data for U.S. affiliates of foreign companies indicates that Japan was the largest direct investor in the U.S. steel industry in the 1980s -- a shift away from Europe and Canada and towards Japan. The stock of PP&E of Japanese-owned affiliates jumped from only \$89 million in 1980 to reach \$3.2 billion by 1988, while the PP&E of European-owned affiliates declined from \$1.1 billion to \$0.9 billion. This shift is not surprising as the eight largest Japanese steel firms realized accumulated profits of \$7.8 billion during 1978-88, and thus possessed ample funds for foreign investment, while the 12 largest European Community steel firms ran cumulative losses of \$25.6 billion.¹³ French companies, nevertheless, moved up to become the second largest U.S. investors in the steel industry between 1980 and 1988, primarily through acquisitions in the United States by their state-owned steel conglomerate.

⁹For years 1980-84, see *Survey of Current Business*, Bureau of Economic Analysis, Aug. 1985, p.65. For years 1985-89, see Aug. 1990, p. 54.

¹⁰*Ibid.*

¹¹*Supplement to Employment and Earnings* (Washington: U.S. Department of Labor, Bureau of Labor Statistics) 1980 data, July 1984 issue, p. 51; 1988 data, August 1989 issue, p. 41 and 42.

¹²Estimate by the United Steelworkers of America.

¹³*Steel Strategist* no. 17 (New York: Paine Webber Inc., Feb. 1991) p. 118.

These data tend to exaggerate Japan's share of the total stock of foreign investment, since they are based upon the book value of gross property, plant, and equipment, which understates older and mostly European and Canadian investments. Japan's rising share of investment in the industry between 1980 and 1988 is also reflected, however, in its share of industry sales and employment. Japanese owned affiliates accounted for \$3.5 billion or 6 percent of industry-wide sales in 1988 while European owned affiliates accounted for \$2.8 billion or 5 percent (Figure 8-4).

Japanese Investment--A Dominant Factor

Publicly available information indicates that Japanese direct investment in the U.S. steel industry began in 1968 with Sumitomo Metal's acquisition of a 10 percent stake in a small California tube manufacturer. Major investments, however, did not begin until 1984 when the United States signed a voluntary restraint agreement (VRA) with Japan, limiting Japanese steel exports to the United States. In August, 1984, just prior to that agreement, NKK, one of the top five steelmakers in the world, acquired 50 percent of National Steel after the U.S. Justice Department had disallowed a bid for National by US Steel on antitrust grounds. That same summer, Nisshin Steel, an affiliate of Nippon Steel, the world's largest steelmaker, entered into a contract with Wheeling Pittsburgh Steel to build a galvanizing line in the U.S. to serve the automotive sector while Kawasaki Steel and the Brazilian steel manufacturer, CVRD, each purchased a half share in Kaiser Steel's largely closed Fontana, California steel mill.

Some of these investments were less than completely successful as many problems developed with

regard to labor and the condition of the plants. Nevertheless, numerous Japanese investments have continued since then; for example Kawasaki Steel obtained a 50 percent share of Armco in 1989 and Nippon Steel obtained 13 percent of Inland Steel in a 1990 stock swap. All five of Japan's integrated steel producers have thus made substantial investments in American steel manufacturing facilities.

According to the Japan Economic Institute, as of October 1989, of 34 announced investments in the U.S. steel industry, Japanese firms had established 6 wholly-owned new manufacturing subsidiaries, entered into 17 "greenfield" joint ventures, and acquired shares ranging from 33 to 85 percent in 11 existing plants or production lines with 8 different American firms.¹⁴

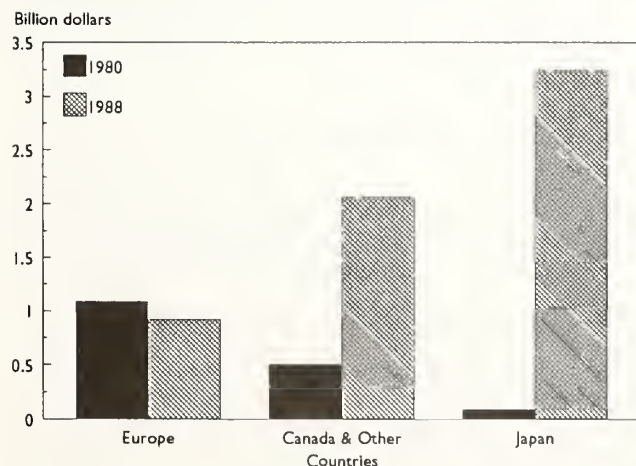
Japanese firms have tended to favor establishing new plants rather than acquiring a stake in already existing manufacturing facilities. This preference for "greenfield" investments may reflect, in part, a desire by Japanese steel firms to exploit their technological advantages in production engineering. Much of Japanese investment in the U.S. steel industry is concentrated in plants which process raw steel, such as the manufacture of galvanized sheet or mechanical tubing for automobiles. With the exception of NKK's majority interest in National, Kawasaki Steel's 50 percent stake in the Eastern Steel Division of Armco, and Kobe Steel's 50 percent interest in US Steel's Lorain, Ohio plant, Japanese firms have little exposure to the primary "hot-end" sector of the industry where raw steel is produced and where issues related to the environment and obsolete facilities tend to arise.

Japanese-U.S. Joint Ventures

Japanese direct investment in the U.S. steel industry has, for the most part, taken the form of joint ventures with existing American steel firms. Exceptions include NKK's equity interest in National, the reciprocal stock swaps between Nippon Steel and Inland Steel, and the outright purchase of several small specialty steel manufacturers.

The U.S. partners' motivation for entering such joint ventures is clear--the availability of Japanese capital. For example, the Chairman of Inland Steel pointed to access to Japanese credit as the major reason for entering into its joint venture in 1987 with Nippon Steel.¹⁵ In most joint ventures, the American partners have contributed only a token amount of the initial investment. Out of the eight major joint ventures between Japanese steel firms and U.S. integrated firms, totalling over 16 million metric tons of annual production capacity, the Japanese have invested or plan to invest an initial total of \$2.04 billion against only \$155 million by the American partners, even though the parties typically have equal equity shares.¹⁵

Figure 8-4
U.S. Steel Affiliates' PP&E, by Country of Ownership, 1980-88



Source: Bureau of Economic Analysis.

¹⁴Japan's Expanding U.S. Manufacturing Presence (Washington: The Japan Economic Institute, October 1989) pp.71-72.

¹⁵Sallie Gaines, "Japanese Bankroll Resurgence of U.S. Steel Industry," *Washington Post*, 1 April 1990, p. 65.

In several U.S. specialty product areas, many firms are already wholly foreign-owned. Nevertheless, Japanese investors generally seem to prefer entering into joint ventures with American steel manufacturers rather than to purchase them outright due to several economic and political factors. The financial burden of the very large capital requirements of a steel plant can be eased by sharing capital, technological and managerial expertise, sales networks, and customer bases to provide the synergy for decreasing business risks and increasing profit opportunities. Perhaps more importantly, however, joint ventures are attractive to Japanese firms because of the ability to direct the investment along narrow product lines aimed at specific high-value markets. By legally separating their investment from less desirable portions of the American partner's assets, Japanese investors can hope to avoid the cost and political embarrassment of problems associated with under-funded pension plans, labor unions, employee layoffs, and environmental issues.

Japanese sensitivity to the political ramifications of wholesale acquisitions of American steel manufacturers may be an additional motive for their preference for joint ventures. By engaging a local partner, Japanese firms ameliorate the perception that they are a competitive threat to domestic steel companies.

Japanese Finance

Much of the impetus for Japanese finance and investment originally came from the U.S. side. Unable to attract capital in the early 1980s because of the steel industry's unprofitability, yet aware that only investment in new technology could make the industry competitive, American steel manufacturers began to accept supplier credits from Japanese machinery and steel firms. Urgent modernization projects were undertaken, in many cases using Japanese technology, to install continuous casting equipment, for example. In fact, in the early to mid 1980s, each of the U.S. integrated mills, with the exception of Bethlehem Steel, utilized Japanese financing to undertake modernization projects. Today, it is no coincidence that Bethlehem Steel remains the only integrated mill that does not have a joint venture with a Japanese steel manufacturer.¹⁶

The Japanese partners offered longer term, lower interest loans than American banks and in many cases were willing to lease equipment on easy terms. With their close links to Japanese banks and the Japanese steel industry, the Japanese steelmaking equipment suppliers had no difficulty in winning the bulk of steel plant modernization orders.

Labor Relations

Japanese investors have generally left the responsibility of managing labor relations to their American

partner. In the past, joint ventures have fallen under the company-wide collective bargaining agreements entered into by the American partner with labor unions. Other than California Steel, which is the joint venture between Kawasaki Steel and a Brazilian company, all major Japanese investments in the U.S. steel industry have retained unionized labor forces. Wage rollbacks have not been as much of an issue as in Japanese owned auto plants in the United States. Recently, however, there was an attempt by the Kobe-USS joint venture in Lorain, Ohio, to dissociate itself from the collective bargaining agreement negotiated between USS and the USW. Although the USW local ratified a contract with the Kobe-USS joint venture in February 1991, which is little different from the USS collective bargaining agreement, the attempt by the joint venture to differentiate itself from USS may be indicative of future labor policy in the foreign-owned steel sector.¹⁷ Previously, the joint venture between US Steel and the Korean company, Pohang Iron & Steel, managed to separate itself from the USS collective bargaining agreement and win considerable concessions from labor as a separate entity from USS.

Japanese Technology

The Japanese steel industry is in many applied technology areas, particularly production technology, more advanced than the U.S. steel industry. This is a result of close cooperation with steel mill machinery manufacturers and steel consumers, high levels of investment in R&D, and close attention to productivity to compensate for the relatively high cost of energy and raw materials in Japan. According to an American steel executive, as U.S. steel firms slashed in-house engineering departments to cut costs, the U.S. steel industry's start-up rates and learning curves for steel making technology fell considerably behind that of Japanese producers.¹⁸ A comparison of corporate R&D expenditures as a percentage of net sales between Japanese and American steel producers between 1985 and 1989 show a marked competitive advantage in favor of Japanese firms, with Japanese-owned affiliates averaging four times more R&D spending per unit of sales than the industry as a whole.

Influence of Automobile Industry

Much of Japanese investment in the U.S. steel industry has been directed towards servicing the new automobile plants built by Japanese auto firms. A number

¹⁶Annual Survey Concerning Competitive Conditions in the Steel Industry and Industry Efforts to Adjust and Modernize (Washington: International Trade Commission, October 1989) pp. M 2-3.

¹⁷USW OK's USS/Kobe Contract," *American Metal Market*, February 20, 1991, p. 1.

¹⁸Thomas J. Usher, "Steel Industry in the Nineties," *Iron and Steel Engineer*, February 1991, p. 26.

of new greenfield plants have been constructed which produce corrosion-resistant zinc or nickel-coated steel sheet for use in the manufacture of motor vehicle bodies. In Japan, auto-makers had long used thinner, less effective anti-corrosion coatings on automobiles due to the high cost of these electricity intensive products. They have, however, recently brought their standards up to U.S. automakers levels.¹⁹ By 1993, Japanese-American joint ventures will have added approximately 3.5 million net tons of annual production capacity in coated steels, primarily for sale to auto manufacturers in the United States.²⁰ Although Japanese firms have provided technical assistance to American producers in the coating of steel since the late 1970s, the large volume of steel sheet required by transplanted Japanese automakers in the United States, over 2 million net tons annually by 1991, has attracted investment in the United States by Japanese steel firms familiar with the distinct product specifications of Japanese automakers.²¹

Shared customer bases are particularly attractive for joint ventures producing high value added steel mill products for the domestic automotive industry. Due to the necessity of ensuring reliable and prompt deliveries of acceptable quality steel and the desirability of inter-industry cooperation in the design and production of automobiles and automotive parts, automotive firms strongly prefer to engage in long term supplier relationships with a very limited number of steel firms. American and Japanese automakers have in the last few years reduced the number of their steel suppliers in order to improve the consistency of steel purchases and to make communications with suppliers easier. The Japanese just-in-time inventory systems adopted by American automakers also require few suppliers.

European and Canadian Investment

While Japanese investment is the prominent foreign direct investment trend in the U.S. steel industry, other countries have been important sources of foreign investment in American steel. France, in particular, through its 100-percent-state-owned steel conglomerate, Usinor-Sacilor, has since 1980 greatly expanded its presence in the U.S. steel industry. Usinor has become the largest steel firm in Europe through aggressive acquisitions and is close to becoming the largest firm in the world. Press reports indicate that in 1990, Usinor was the first foreign firm to acquire 100 percent ownership of a major U.S. steel firm--its \$570 million buy-out of J&L Specialty Products, the second largest U.S. stainless flatware producer. Usinor also attempted to acquire a significant minority stake in

LTV Steel, the third largest steelmaker in the U.S., but the negotiations fell through due to Usinor's unwillingness to assume the pension obligations on which LTV had defaulted in bankruptcy. Echoing the trend of Japanese steel firms to follow their compatriot auto manufacturers into the United States, Usinor last year purchased a 50 percent stake in Georgetown Steel, a maker of steel cord for use in tires, following the purchase of Uniroyal-Goodrich by the French tire maker, Michelin.²² According to the press, Usinor, which benefited from an estimated \$16 billion in subsidies from the French government during the steel recession of the 1980s, has resources to spend on overseas investments because it has not used up tax credits carried forward from that period.²³

British Steel, only denationalized in 1988, recently signed a letter of intent to study the possibility of forming a joint venture with Bethlehem Steel to produce rail and structural steel using Bethlehem's Steelton, Pennsylvania mill.²⁴ Last year, British Steel assumed full ownership of Tuscaloosa Steel in Alabama.

European investment in the U.S. steel industry is generally concentrated in the specialty steel sector which manufactures alloy and stainless steel. To date, European firms have not made significant investments in, or entered into major joint ventures with American integrated steel manufacturers.

Canadian investment in American steel has focused primarily on the mini-mill sector, which produces structural steel using scrap-based electric furnaces. Several important American minimill companies, such as Atlantic Steel and Raritan River Steel, are controlled by Canadian firms. Most of this investment occurred in the early 1980s when the sector's financial and market prospects were optimistic in comparison to the U.S. integrated sector, which was under heavy attack by imports and laden with obsolete steel making capacity.

International Trade

Throughout the 1980s, the U.S. steel affiliates' foreign trade was in deficit, but the deficit level was relatively small compared to that of the overall U.S. trade in steel products, at \$422 million in 1988 compared with \$5.6 billion (Figure 8-5). The U.S. affiliates' exports in the 1980s remained small -- much smaller than their imports -- and their trend relatively flat, reaching \$135 million in 1988. Imports doubled in the first half of the 1980s, reaching \$639 million in 1985, and then tapered down to \$559 million in 1988.

The U.S. affiliates' exports decreased slightly in the 1980s, despite the sharp rise in foreign direct investment

¹⁹Constance Grzelka in "The Driving Force behind Ford's Steel," *Automotive Steel Supplement, American Metal Market*, 17 Dec. 1990, p. 18A.

²⁰Information provided by the Japanese Steel Information Center.

²¹Russ McCulloch, "Keeping the Automarket Covered," *Metal Bulletin Monthly*, May 1990, pp. 97-99.

²²"Usinor Sacilor May Spend \$1 Billion to Upgrade LTV's Sheet Production," *Iron Age*, May 1990, p. 10.

²³Laura Jercski, "A Gallic Threat to American Steel," *Forbes*, 26 November 1990, p. 146.

²⁴Press release, Bethlehem Steel Corp., 24 January 1991.

in the U.S. steel industry and the improved competitiveness afforded by U.S. dollar devaluation after 1984. Their lagging export performance may be partly explained by their orientation towards supplying domestic U.S. steel consumers. The U.S. affiliates' exports constitute only 1.4 percent of their sales in 1988, even less than the weak 4.0 percent for the steel industry as a whole. The European-owned U.S. steel affiliates had a greater propensity than Japanese affiliates to export, shipping 3.6 percent of their sales overseas in 1987, compared to only 0.2 percent for Japanese-owned affiliates.

Publicly available information indicates that the U.S. steel affiliates have tended to be large importers of raw steel--especially the British Steel-owned Tuscaloosa Steel, California Steel, and the USS-Posco joint venture, all of which imported large quantities of semi-finished steel from their parent firms for finishing (according to press reporting). Analysis of affiliates' import characteristics is not feasible, as the BEA trade data, which are on an "industry of affiliate" basis, has not differentiated between imports of capital equipment and imports of raw steel over time. (Data are available only for 1980.)

U.S. steel affiliates probably played a role, albeit small, in the overall trend in U.S. steel trade. Imports as a percentage of U.S. apparent consumption of steel mill goods in 1990 dropped to 17.5 percent, the lowest rate since 1980 and markedly down from the rate in 1984 of 26.4 percent. The decline in the overall U.S. steel imports and the rise in U.S. steel exports in the past few years is

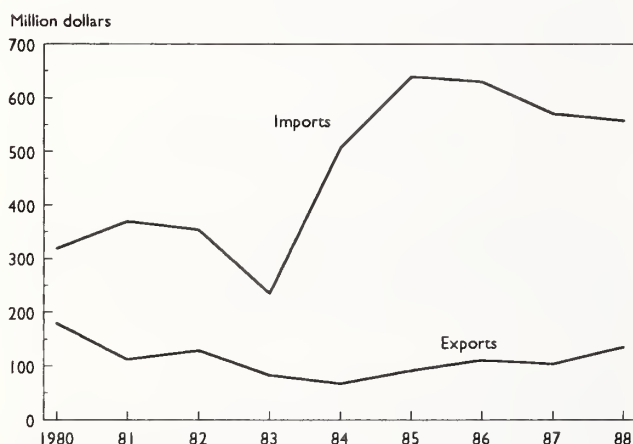
probably primarily attributable to strong overseas demand and the decline of the dollar vis-a-vis the currencies of major trading partners.

Some substitution of imports with domestic U.S. output is beginning to appear. This is particularly true as a result of the new "greenfield" plants, which are reducing the need for imports of specialty coated steels. The best example of this effect may be seen in imports of galvanized steel sheet and strip from Japan, which have been cut in half in net tonnage terms since 1984, when major Japanese-owned galvanized steel joint ventures first came on stream. Japanese transplanted auto manufacturers are under political pressure to increase the U.S.-produced content of their U.S. operations and have announced their intention to increase their U.S. parts procurement to 75 percent.²⁵ Some Japanese transplants, such as Nissan, expect to purchase close to 100 percent of their coated steel from U.S. output by 1991, when Japanese joint ventures with Armco and LTV are expected to meet Japanese grade and quality specifications.²⁶ U.S. imports of Japanese galvanized steel are expected to diminish further when additional U.S. galvanizing capacity comes on line, such as the 900,000 tons per year from the Inland-Nippon joint venture scheduled to begin in 1991.

Research and Development Expenditures of U.S. Affiliates

U.S. steel affiliates' expenditures on research and development have been negligible (according to BEA data) relative to the industry as a whole. The U.S. steel affiliates spent on R&D only \$4 million in 1980 and \$18 million in 1988, compared with the whole U.S. steel industry R&D spending of \$338 in 1980 and \$257 in 1988. As a ratio to sales, this amounts to only 0.04 percent for the affiliates, compared with the industry-wide ratio of 0.6 percent. Nevertheless, the foreign parents of the affiliates spend large amounts on R&D in their own countries. The R&D spending to sales ratio of the top six Japanese steel making firms, for instance, was 2.7 percent of sales on R&D in 1989, and these foreign parents often bring their new technology to their U.S. affiliates.

Figure 8-5
U.S. Steel Affiliates' Foreign Trade, 1980-88



Source: Bureau of Economic Analysis.

²⁵ *Japanese Automotive Manufacturer Sales Expansion Programs*, (Washington: International Trade Administration, 1990).

²⁶ Bryan Berry, "Galvanizing Puts on New Coats", *Iron Age*, September 1989, pp. 55-56.

FOREIGN DIRECT INVESTMENT IN THE U.S. CHEMICALS INDUSTRY

by Sandra D. Cooke and Susan M. LaPorte,* and Emily A. Arakaki**

The chemicals industry is one of the most "globalized" of all U.S. manufacturing industries.¹ Foreign firms held substantial equity interests in approximately 24 percent of the U.S. industry in 1988, as measured in terms of sales volume, up from 15 percent in 1980. These chemicals-related investments, moreover, account for almost 30 percent of the entire foreign direct investment (FDI) assets held in the U.S. manufacturing sector.

Increasing chemical production surpluses worldwide and a maturing market caused prices and profits to decline in the early 1980s, leading to a major restructuring of the industry. Opportunities arose for foreign multinationals to expand in the United States and they took advantage of it. The result has been unprecedented levels of foreign investment in the chemicals industry over the past decade. According to industry analysts, the U.S. chemicals industry has prospered from this increase in foreign activity, not in spite of it.

The recent growth in foreign direct investment in the chemicals industry can be attributed to several factors. The large size of the U.S. chemical market and the importance of economies of scale have been major incentives for foreign direct investment, as also has the need for foreign companies to produce in the United States to lower transportation costs, especially for specialty chemicals, in selling to the U.S. market. Hedging against exchange rate fluctuations and spreading the industry's huge research and development costs over a larger sales volume, have also been important factors as well.

The outlook for continued foreign investment in the U.S. chemicals market is excellent. European firms are expected to continue to increase their already large investments while Japanese and developing countries' firms

have just begun to expand their shares of the world chemical market.

Highlights: 1980-1988

BEA survey data indicate the following key trends in the performance of U.S. affiliates in the chemicals industry during 1980-1988:

- o U.S. affiliates of foreign companies' share of chemicals industry sales grew from 15 percent to 24 percent.
- o Employment related to foreign investments grew at a 6 percent annual rate compared to a 1 percent per year decline in the industry as a whole.
- o Gross property, plant, and equipment (PPE) held by the affiliates grew from \$18.3 to \$58.2 billion. PPE per employee increased from \$64,800 to \$153,000, on a current dollar basis.
- o Industrial chemicals consistently accounted for the highest share of sales, employment, and PPE.
- o Investment outlays to acquire or establish new U.S. chemicals affiliates grew from \$253 million to over \$11 billion.
- o Compensation per employee for U.S. based affiliates of foreign companies is comparable or slightly higher than that paid by the U.S. chemicals industry as a whole.
- o R&D remained higher throughout the period for the affiliates than that of the industry as a whole--4.8 percent for affiliates in 1988 compared to 4.1 percent for the industry.
- o Affiliates' export performance climbed to 11.2 percent of sales in 1988 from 7.6 percent in 1980, but was below the industry average which declined from 13.7 percent to 12.4 percent during this period. The pace of the affiliates' export growth was almost three times that of the industry as a whole. Unlike other industries, affiliates have a large positive trade balance--increasing from \$389 million in 1980 to \$2.3 billion in 1988.
- o Canada was the largest investor in 1988, replacing West Germany which led in 1980. Other major investors include the United Kingdom, Switzerland

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¹ For the purpose of this analysis, the chemicals and allied products industry is subdivided into four subindustries: Industrial Chemicals, which includes industrial inorganic chemicals (SIC 281) industrial organic chemicals (SIC 286) and plastics materials and synthetics (SIC 282); Drugs (SIC 283); Soap, cleaners and toiletries (SIC 284) and "Other" which includes agricultural chemicals (SIC 287), paints and allied products (SIC 285) and miscellaneous chemical products (SIC 289).

Foreign direct investment has been revalued from historical cost basis to current cost and market value bases at the aggregate level but not for individual industries. Hence, historical costs are used in the analysis.

and the Netherlands. Japanese firms continue to be relatively less important investors.

- o Foreign investments were concentrated in the Mideast, Southeast, and Great Lakes regions. New Jersey, California, Texas, and Delaware ranked among the top.

Growth in Foreign Direct Investment in the United States

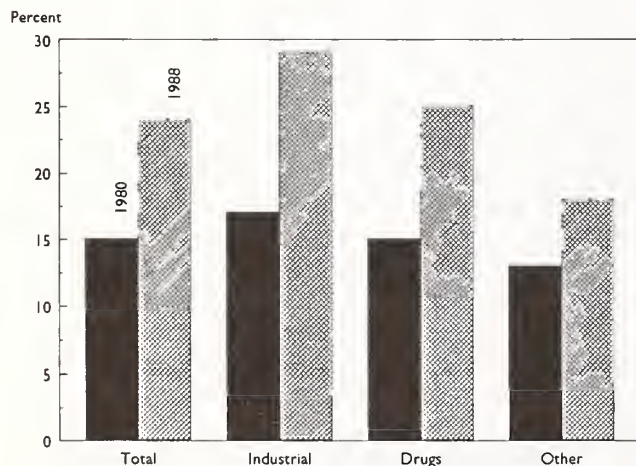
Foreign firms have dramatically increased their presence in the United States chemical industry over the past decade, whether measured in terms of sales, employment, or property, plant and equipment (PPE).

Activity during 1980-88

The share of chemical industry sales held by U.S. based chemical affiliates of foreign firms increased from 15 percent (\$24 billion) to 24 percent (\$63 billion) from 1980 to 1988, according to BEA data (Figure 9-1). Foreign penetration occurred over broad segments of the industry and was deepest in the industrial chemicals subindustry. Drugs and the "other" chemicals subindustries also marked large penetration gains.

Foreign firms did not appear to select any one segment of the chemical industry for concentrated investment; rather investments were spread across the industry in approximately the same distribution as were domestic U.S. investments. Somewhat more emphasis was placed by the affiliates on the industrial chemicals subindustry -- comprising 54 percent of affiliate investment in both 1980 and 1988 compared to 49 percent for the industry as a whole in 1980 and dropping to 44 percent in 1988.

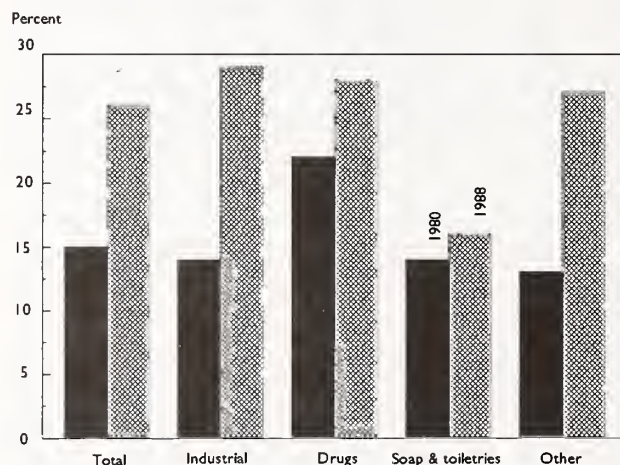
Figure 9-1
U.S. Chemicals Affiliates' Share of U.S. Chemicals Industry's Sales Rises, 1980 to 1988



Sources: Bureau of Economic Analysis and Bureau of the Census.

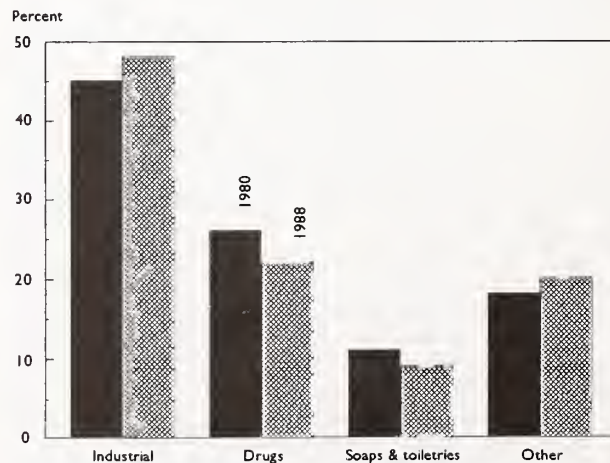
Employment data provide additional evidence of growing foreign investment in the U.S. chemicals industry. U.S. chemicals affiliate employment rose from 169,900 in 1980 to 280,800 in 1988--an annual growth rate of 6 percent--as the number of foreign related firms increased. The U.S. chemicals industry as a whole, in contrast, recorded a decline of 1 percent per year during the same time period. The affiliates of foreign companies accounted for 15 percent of all U.S. chemicals industry employment in 1980, increasing to 26 percent in 1988 (Figure 9-2). The industrial chemicals subindustry accounted for over 45 percent of the total chemicals affiliates' employment in both 1980 and 1988, followed by drugs, "other" chemicals, and soap, cleaners and toiletries (Figure 9-3).

Figure 9-2
U.S. Chemicals Affiliates' Share of U.S. Chemicals Industry's Employment Rises, 1980 to 1988



Source: Bureau of Economic Analysis.

Figure 9-3
U.S. Chemical Affiliates' Employment Share Highest in Industrial Chemicals, 1980 & 1988



Source: Bureau of Economic Analysis.

Gross property, plant, and equipment (PPE) held by U.S. chemicals affiliates increased from \$18.4 billion in 1980 to \$58.2 billion in 1988 (Figure 9-4) in current dollar terms. The industrial chemicals subindustry accounted for almost 80 percent of affiliate PPE in 1988, up from 61 percent in 1980.² While affiliate PPE in the drugs and soap, cleaners, and toiletries industries increased from 1980 to 1988, it declined considerably in the "other" category due most likely to the repurchase by a U.S. company of the foreign interest in a large agricultural chemicals affiliate firm.

PPE per employee in the affiliates increased substantially in each industry subgroup from 1980 to 1988, an indication that the affiliates are becoming more capital intensive. For the chemical sector as a whole, capital per employee increased from \$64,800 in 1980 to \$153,000 in 1988, an increase that far surpassed the increase due to price increases alone.

Activity in 1989

The most recent Bureau of Economic Analysis survey data available at time of preparation of this report covered only through 1988. Foreign acquisition activity continued in 1989 at a record rate, however. Separate BEA data on the flow of funds from foreign investors into the U.S. chemicals industry show the dramatic additional growth in 1989, for which preliminary data show a more than three-fold increase--the result of one very large transaction. These investment outlays to acquire or establish chemical firms in the United States increased from \$253 million in 1980 to over \$11 billion in 1989, an average annual growth rate of 52.1 percent. The investment mainly has been made by foreign investors directly, rather than by the U.S. affiliates of foreign companies. In

each year there were significantly more acquisitions than establishments, indicating that foreign investors prefer to acquire existing U.S. companies rather than establish new production facilities.

The ten largest foreign investment transactions in the chemicals industry, as compiled by the International Trade Administration, are summarized in Table 9-1.³ In 1989, the value of identified chemical industry transactions totalled more than \$15.7 billion, up sharply from the \$3.0 billion in 1988. There were several acquisitions/mergers of pharmaceutical companies during 1989, the largest of which involved a merger between a British and a U.S. pharmaceutical company, valued at \$8.2 billion. Four of the ten largest transactions were in the drugs industry. Six of the ten transactions were acquisitions or mergers and the other four were either equity purchases or new plants.

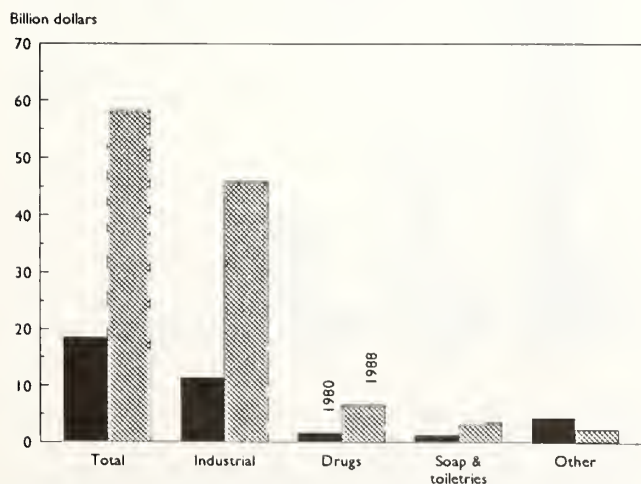
Characteristics of Chemicals Affiliates

U.S. affiliates of foreign firms in the chemicals industry differ only slightly from the U.S. chemicals industry as a whole as measured by employee compensation, research and development intensity and the propensity to export. Care must be used in interpreting even these differences. The tendency for the affiliates to spend more on R&D, for instance, could be misinterpreted as an indication that foreign investors are more willing to undertake long range investments than the industry as whole

²PP&E data are based on historical book value, and may understate their current market value.

³International transactions were compiled by the International Trade Administration and include value of acquisitions/mergers, joint ventures, new plants, plant expansions, equity increases, and real estate investment and therefore are not directly comparable to the data provided by the Bureau of Economic Analysis on acquisitions and establishments.

Figure 9-4
Share of U.S. Chemicals Affiliates' Gross Property, Plant & Equipment Rose Most in Industrial Chemicals, 1980 to 1988



Source: Bureau of Economic Analysis.

Table 9-1
Ten Largest Foreign Investment Transactions During 1989

Foreign Investor	Country	U.S. Company	Value of Transaction (millions)
Beecham Group	U.K.	Smithkline Beckman	\$8,253
Unilever	Netherlands	Faberge	\$1,550
Govt. of France	France	Pennwalt	\$1,050
Fujisawa Pharm.	Japan	Lyphomed Inc.	\$798
Henkel KGAA	Germany	Quantum Chem	\$480
Yamanouch Pharm.	Japan	Shaklee	\$395
Unilever	Netherlands	Minnetonka	\$376
Formosa Plastics	Taiwan	Formosa Plastics	\$300
Glaxo Holdings	U.K.	Glaxo	\$300
Feruzzi Family	Italy	Ausimont	\$282

Source: U.S. Department of Commerce, International Trade Administration.

whereas it may simply suggest that R&D intensive firms are of more interest as acquisitions. Similarly, levels of employment compensation and trade activity could be related more to acquisition criteria than to a firm's long term management strategy.

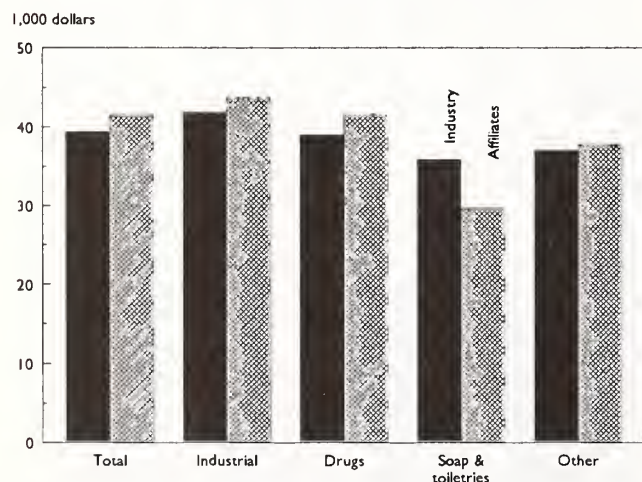
Compensation

In 1988, compensation per employee of U.S. chemicals affiliates averaged \$41,500, slightly exceeding the \$39,300 recorded by the U.S. chemicals industry as a whole (Figure 9-5). The affiliate's pay structure was higher in each case than the industry as a whole with the exception of the soap, cleaners, and toiletries industry. Compensation levels among the various subindustry affiliates were distributed the same way they were for the overall industry, with industrial chemicals workers receiving the highest compensation, followed by drugs, "other," and soap, cleaners, and toiletries.

Research and Development

The affiliates also spent more on research and development relative to their sales than did the industry as a whole. R&D spending for the entire industry totaled 4.1 percent of sales, up from 2.9 percent in 1980 (Table 9-2). Affiliates, in comparison, spent 4.8 percent of sales on R&D in 1988, up from 3.0 percent in 1980. R&D expenditures by the affiliates in 1988 (\$3.6 billion) was more than four times their 1980 level (\$834 million) (Figure 9-6). Industrial chemicals affiliates accounted for more than half of this spending in both 1980 and 1988. R&D expenditures in the pharmaceutical industry, however, increased the fastest with a 400 percent jump.

Figure 9-5
U.S. Chemicals Affiliates' Compensation per Worker Slightly Higher than Chemicals Industry Average, 1988



Source: Bureau of Economic Analysis.

Five major affiliates had R&D expenditures in the United States of at least \$1 billion in 1989.⁴ DuPont (Canada), Hoechst (West Germany) and Bayer (West Germany) each invested \$1.4 billion. Ciba-Geigy (Switzerland) invested \$1.2 billion and BASF (West Germany) invested \$1.0 billion.

These high levels of R&D spending in the United States by affiliate firms are part of a pattern developing in the industry in which research by a multinational corporation is no longer simply a headquarters, i.e. home country, function but is carried out in many different locations and countries. This is leading to a vastly expanded flow of

Table 9-2
Research and Development Expenditures as a Percent of Sales for Chemical Affiliates Compared with All U.S. Chemical Industry Firms

	U.S. Affiliates			Industry ^a		
	1980	1988	Change 1980-88	1980	1988	Change 1980-88
All Chemicals	3.0	4.8	1.8	2.9	4.1	1.2
Industrial ^b	3.1	4.2	1.0	2.9	3.4	0.5
Drugs	9.5	10.1	0.6	7.9	10.2	2.3
Other ^c	1.3	2.1	0.8	1.1	2.1	1.0

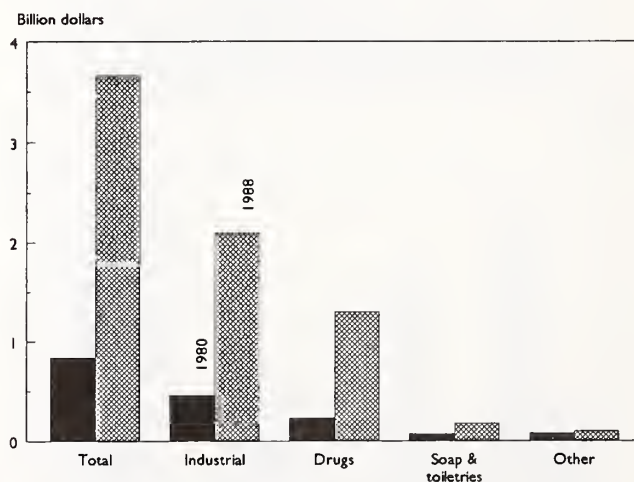
^aU.S. industry ratios were computed using R&D data from the National Science Foundation and sales from the Bureau of the Census and therefore are lower than ratios published by the NSF, which use net sales.

^bIndustrial chemical includes plastics products.

^cOther includes soap, cleaners, and toiletries, agricultural, paints and other chemicals not elsewhere classified.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of the Census; National Science Foundation.

Figure 9-6
U.S. Chemicals Affiliates' R&D Expenditures Rise Rapidly, 1980 to 1988



Source: Bureau of Economic Analysis.

⁴R&D expenditures for individual chemical firms were obtained from a *Chemical Engineering News* survey.

technology worldwide with benefits for both the United States and other countries.

Trade Patterns Among Affiliates

Chemicals affiliates are more export oriented than most U.S. affiliates of foreign companies, as evidenced by their trade surplus growing from \$389 million in 1980 to \$2.3 billion in 1988 (Figure 9-7). Exports by affiliates grew from \$2.1 billion in 1980 to \$8.5 billion in 1988 while imports increased from \$1.7 to \$6.2 billion. The fastest export growth occurred in the industrial chemicals subindustry while the fastest import growth occurred in the drugs and related products subindustry. Drug affiliates often purchase the primary inputs for medicinals from their foreign parents thus increasing the level of imports into the United States.

In 1980, chemicals affiliates in each subindustry exported more than they imported. By 1988, however, three subindustries, drugs, soap, cleaners, and toiletries and "other" chemicals all reversed themselves and imported more than they exported (Figure 9-8). In the case of "other" chemicals, there is a sharp decline in both imports and exports from 1985 to 1986, explained by the repurchase by a major U.S. agricultural chemicals firm of interests held by a foreign firm--hence shifting it out of the affiliate category.

The positive trade performance of the chemicals affiliates is a reflection of the strong export orientation of the U.S. chemicals industry as a whole, and industrial chemicals in particular (Figure 9-9). From 1980 to 1988, U.S. chemicals exports and imports rose steadily, with imports rising more rapidly than exports, but nevertheless ending with a trade surplus of \$12 billion in 1988, compared to \$14.5 billion in 1980.

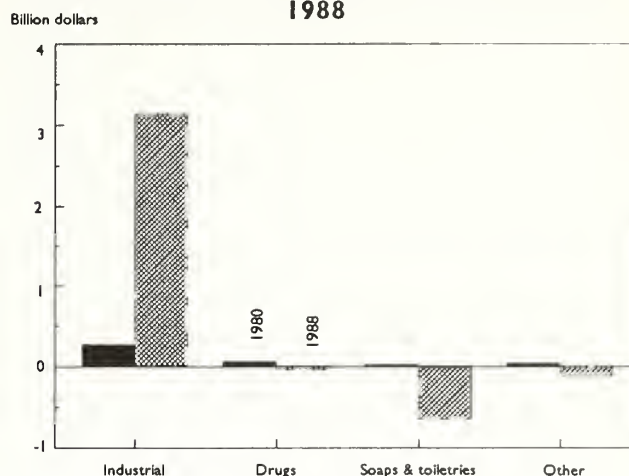
During 1980-88 exports became an increasingly important outlet for the chemicals affiliates' sales, becoming

Figure 9-7
U.S. Chemicals Affiliates' Trade Surplus Rises, 1980-88



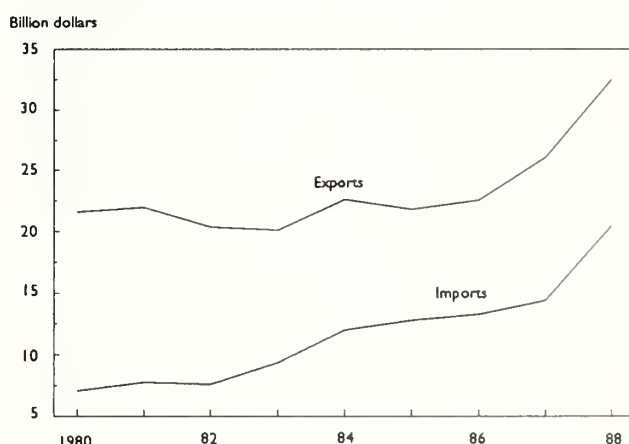
Source: Bureau of Economic Analysis.

Figure 9-8
U.S. Chemicals Affiliates' Trade Surplus in Industrial Chemicals Rises, Small Surpluses Become Deficits in Other Subindustries, 1980 to 1988



Source: Bureau of Economic Analysis.

Figure 9-9
U.S. Chemicals Industry's Exports Rise Sharply in Last Half of 1980s



Source: Bureau of the Census.

ing slightly less important for the industry as a whole. Affiliates steadily increased their export share of sales from 7.6 percent to 11.2 percent in the 1980 to 1988, while the share for the industry declined from 13.7 to 12.4 percent.

Country of Investment

In terms of sales, employment, and PPE data -- European firms represent a dominant, but declining share of foreign direct investment in the U.S. chemicals industry. European-owned chemicals affiliates' share of all U.S. chemicals affiliates declined from almost 93 percent (\$22.3 billion) in 1980 to a still dominant share of 75

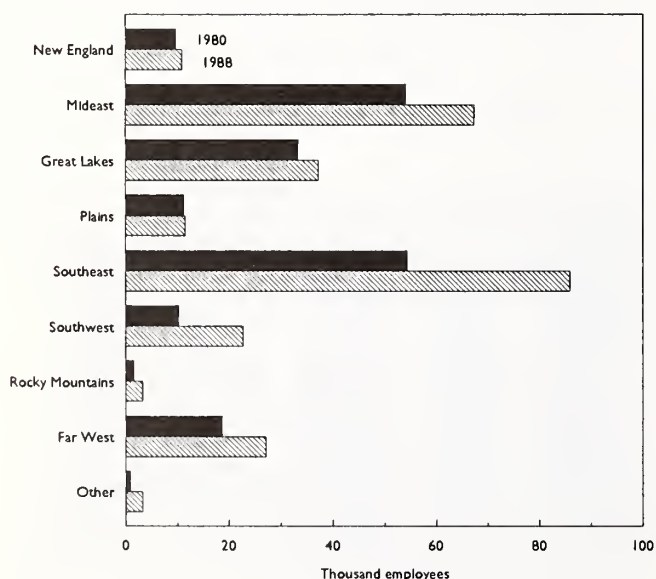
percent in 1988. U.S. affiliates of West German firms retained their important role over this period -- accounting for 26 percent of sales in 1980 and 24 percent in 1988.

Canadian-owned affiliates made a huge share of sales increase from only 3 percent in 1980 to 19 percent (\$11.9 billion) in 1988, with a large share of their increase accounted for by a Canadian purchase of a 23 percent share in one of the largest U.S. chemicals firms. Under the accounting rules used for international direct investment, all of this company's U.S. operations would be counted as those of a foreign-owned affiliate while its foreign operations would be counted as U.S.-owned because of the majority ownership of American owners. U.K.-owned affiliates maintained approximately the same share over the period, while those of the Netherlands, Switzerland, and France lost market share. Japan, which has become an important participant in most other areas of foreign investment in the United States, has been a small player in the chemicals sector -- its share marginally increasing from 1.6 percent to 3.3 percent.

Regional Distribution of Foreign Investment

Foreign investment in the U.S. chemicals industry is concentrated in four regions: the Southeast, Mideast, Great Lakes, and Far West in order of size based upon employment (Figure 9-10). In terms of employment, North Carolina maintained its lead position in the Southeast region throughout the 1980-1988 period. Virginia, with a four fold increase moved to second place in 1988

Figure 9-10
U.S. Chemicals Affiliates' Employment Highest in Southeast and Mideast States, 1980 & 1988



Source: Bureau of Economic Analysis.

followed by South Carolina. New Jersey and New York led the Mideast region in both 1980 and 1988 while the Great Lakes region was led by Illinois, which remained the leading U.S. chemicals affiliate employer in 1988 despite a decline in employment from 1980. The Southwest and Far West regions, though much smaller, showed large increases in chemical affiliates' employment. By state, New Jersey, Texas, and California had the highest levels of chemical affiliate employment in 1988.

When measured in terms of PPE, the distribution changes are due largely to the role of the petrochemical industry with its very low ratio of employment to capital stock. Texas, New Jersey, and Delaware held the top positions in 1988. Recent large acquisitions of petrochemical related plants in the Southwest have moved that region ahead of the Great Lakes and close to the level of the Mideast states. The Southeast region still, however, was the overall leader with \$19.4 billion in total PPE in 1988. Affiliates in three states, Louisiana, North Carolina, and West Virginia, each had PPE valued at more than \$3 billion.

Foreign Direct Investment in U.S. Biotechnology

Biotechnology is one of the key critical technologies identified by the Department of Commerce. Biotechnology uses organisms or parts of organisms to make new or improved products, plants, and animals. Biotechnology is having a significant impact on health care through the development of new drugs, diagnostics, and approaches to treating diseases. It has the potential for many promising applications in other industries, including plant and animal agriculture, cleanup of environmental wastes, food processing, chemicals, and renewable energy. Because of the profound impact that biotechnology can have on the economy and on national security, the U.S. government placed biotechnology on its lists of critical emerging technologies.

More than 550 firms have been formed in the United States to exploit the promise of biotechnology, mostly since 1975. An additional 400 firms supply the biological and chemical materials, instrumentation, and equipment essential to perform research and manufacture desired products. Many firms, primarily from the pharmaceutical, chemical, and agribusiness sectors, have established alliances with small, new entrepreneurial firms to catch up with technical developments or obtain rights to new products.

Corporate alliances have been growing in number, from 30 in 1981 to 400 in 1988, according to the General Accounting Office. Alliances involving foreign partners have played an important part of this process, increasing from 30 percent of all alliances in 1981 to 45 percent in 1988.

Trends in Foreign Direct Investment in U.S. Biotechnology

An accurate accounting of foreign direct investment is difficult because of insufficient data. Further, biotechnology is not a single industry but involves technologies used by a variety of industries. Classifying a company as "biotech" requires some knowledge of the firm's research programs or production methods. To obtain a picture of foreign direct investment trends in U.S. biotechnology, the International Trade Administration (ITA) reviewed publicly available information on investments made by European, Japanese, and Canadian companies between 1981 and the first quarter of 1991.

ITA found that about 40 U.S. companies or parts of companies involved in biotechnology research and development have been acquired by foreign firms. European companies made 36, or 90 percent, of the acquisitions. Most were from France (7), Switzerland (7), Italy (6), and Sweden (6). Japanese firms accounted for four majority-ownership acquisitions. In addition, during the 1981-91 period, at least 36 minority-equity investments (10 to 50 percent) were made. European firms accounted for 72 percent of minority equity purchases, followed by Japanese firms with 25 percent.

Foreign firms also acquired 14 U.S. firms producing instrumentation and chemical and biological materials used in biotechnology R&D and production processes. European companies accounted for 10 of the purchased firms and Japanese companies bought 4 firms. As part of their strategy to expand into plant biotechnology, chemical firms are acquiring seed companies. In the 1980s, at least one dozen U.S. seed companies were bought by European firms -- primarily French and Swiss firms.

The value of foreign investment in biotechnology and related support firms is difficult to estimate because of insufficient data. A conservative estimate for total foreign investment is \$3.5 billion. The value of 32 out of a total of 72 European investments was \$2.9 billion. The value of 10 out of 17 Japanese investments was \$161 million. The largest of the deals is Hoffmann-La Roche's 1990 acquisition of 60 percent of Genentech for \$2.1 billion. The largest Japanese acquisition was Chugai Pharmaceutical's 1989 purchase of Gen-Probe for \$93 million. Most reported deals were less than \$50 million.

Foreign firms also are investing in the United States by establishing research and development facilities of their own. These facilities enable firms to hire scientific teams with diverse skills, and to gain access to research programs at major universities. This process can be cheaper than buying an existing company. At least 20 research and development facilities have been set up, mostly by firms from Japan (6), West Germany (4), and Switzerland (4).

Reasons for Foreign Direct Investment in Biotechnology.

Foreign direct investment in U.S. biotechnology companies is driven by the foreign firms' need to access new sources of products and the U.S. firm's need for financing. Other factors include the excellent entrepreneurial environment and the strong university research efforts in the United States. German firms, in particular, have cited an unfavorable regulatory environment for biotechnology research and manufacturing in Germany as playing a major role in their decision to locate research facilities in the United States.

Foreign acquisitions of U.S. biotechnology firms increased steadily during the 1980s, reaching a peak in 1989 when 9 companies were acquired. 1986 was the peak year for minority equity purchases. By the mid-1980s, the market value of biotechnology companies was affirmed through the approval of new biotech-based drugs. Sales of biotech-derived products, negligible in 1981, surpassed \$1 billion by 1988. Further, by early 1986, Hybritech and Genetic Systems, leading firms in monoclonal antibodies, had been acquired by U.S. pharmaceutical firms, setting the stage for foreign acquisitions.

The decline in the value of the dollar relative to European and Japanese currencies since 1985 also made U.S. firms easier to purchase. The peak years for foreign direct investment coincide with periods when it was difficult for biotech firms to obtain financing in the United States, especially after the decline of the stock market in October 1987. Many biotechnology companies are involved in developing new healthcare and agricultural products that can take many years to bring to market. This situation resulted in acquisitions and mergers between biotechnology companies with similar product goals.

Impact of Foreign Investment

Foreign investment in biotechnology has had a beneficial effect on the industry according to industry analysts. The infusion of financial resources has allowed companies to survive, retained jobs, increased investment in plant and equipment and R&D to develop new products that might have been dropped due to lack of funding.

International investment in biotechnology has by no means been one way. U.S. companies have invested in foreign firms and research facilities in Europe, Japan, and Australia. They have licensed foreign inventions and formed joint ventures, which has given them access to foreign scientific and manufacturing expertise, foreign markets, and partners to sponsor costly clinical trials.

FOREIGN INVESTMENT IN U.S. BANKING

by David C. Lund*

Foreign involvement in the U.S. banking industry has grown rapidly in recent years. Assets of U.S. offices of foreign banks (U.S. subsidiaries, branches, and agencies) grew from \$32 billion in December 1973, the first full year of data availability, to \$785 billion at the end of 1990. This twenty-four-fold jump in assets contrasts to a 3.5-fold increase in assets of domestically-owned U.S. banks, to \$2.9 trillion, over the same period. The rapid asset rise pushed the foreign share of total U.S. banking assets from 3.8 percent of \$856 billion in 1973, to 21.2 percent of \$3.7 trillion in 1990. The foreign share of business lending increased from 7.6 percent (\$189 billion) to 30.6 percent (\$630 billion) over the same period. The foreign share of total deposits increased from 1.7 percent to 14.3 percent.

As of December 1990, there were 727 foreign banking offices in the United States (101 subsidiaries, 370 branches, 224 agencies, and 32 other offices) representing 294 foreign banking "families" (using the Federal Reserve Board term for a group of financially related banking offices) from sixty countries. By way of comparison, there were 12,338 commercial banks in the United States (including multiple offices resulting partly from restrictions on interstate branching). These chartered banks, from a regulatory point of view, are equivalent to the 101 U.S. subsidiaries of foreign banks (also including double counting). There were 2,994 thrifts (S&Ls and savings banks) and 14,544 state and federal credit unions in the United States at the end of last year, according to the statistical office of the *American Banker*, but these financial entities are outside the scope of this report.

In earlier chapters on nonbank industries, foreign direct investment is defined by the Bureau of Economic Analysis as ownership or control of 10 percent or more of the voting securities of a U.S. affiliate. In banking, direct investment in a U.S. bank subsidiary, according to the Federal Reserve Board, generally refers to banks that are more than 25 percent owned by foreign banks. This chapter uses an even broader definition of foreign involvement in the U.S. banking industry in order to include all the major organizational forms used by foreign bankers. Agencies and branches of foreign parent banks and U.S. subsidiaries of foreign banks are the major types of foreign

offices. Foreign banks also own New York investment companies and U.S. offices of Edge corporations, but due to their relatively small size in terms of assets and numbers, we will not focus on them.

The major forms of financial organizations owned or controlled by foreign banks will be discussed later. A later section also provides more detail on U.S. subsidiaries of foreign banks, an institutional form that corresponds more closely to the more than 12 thousand chartered commercial banks in the United States. These subsidiaries are a relatively small part of the overall foreign presence in value terms, but relatively larger in terms of visibility.

Foreign investment in banking has not been a traditional topic covered by U.S. statistical reports on foreign investment. This chapter is only a brief overview that is intended to give some perspective on the relative importance of foreign banks in the U.S. banking industry. Since Japanese banks account for 55 percent of foreign-controlled banking assets in the United States, this chapter pays special attention to that group of foreign banks. Additional information on foreign financial institutions in the United States is provided in the 1990 *National Treatment Study*.¹ The recent and extensive *LaFalce Report*² on the international competitiveness of U.S. financial institutions has also been a very useful resource in the preparation of this report.

Some key findings of this chapter follow.

- o Rapid growth in foreign-owned bank assets has moved foreign asset share from less than 4 percent of total U.S. banking assets in 1973 to over 21 percent in 1990.
- o Earlier growth by foreign banks in the United States partially reflected increased business loans

¹U.S. Department of the Treasury, *Report to Congress on Foreign Government Treatment of U.S. Commercial Banking and Securities Organizations*, November 30, 1990, p. 76 ff.

²U.S. Congress, House of Representatives, Committee on Banking, Finance and Urban Affairs. Subcommittee on Financial Institutions Supervision, Regulation and Insurance. *Report of the Task Force on the International Competitiveness of U.S. Financial Institutions*, 101st Congress, 2nd Session (Washington, DC: U.S. GPO, October 1990). The task force report is commonly referred to as the *LaFalce Report*, after the task force's chairman, John J. LaFalce.

*Senior Adviser to the Chief Economist, U.S. Department of Commerce.

and other services related to growing foreign direct investment in nonbank sectors. More recently, bank asset growth has been rising more rapidly, and asset shares increasing, in banking services that are not as directly related to the activities of foreign businesses in the United States as they used to be. Large current account surpluses abroad, and the relative attractiveness of the United States for investment, also contributed to increased foreign bank activity.

- o A more restrictive regulatory environment in foreign financial markets, particularly Japan, also contributed to expanded asset and liability growth of international banks in the United States and other money center markets. The reasons for this large asset movement into the United States and the United Kingdom by Japanese banks in the 1980s paralleled the reasons for the asset shifts offshore by U.S. banks in the 1960s.

U.S. Offices of Foreign Banks

In the banking sector, a broader measure of foreign direct investment in U.S. banking that includes all significant foreign-owned banking offices, not just subsidiaries, is necessary if the largest parts of the foreign presence in U.S. banking are to be considered. Assets of branches and agencies of foreign banks, the most prevalent types of foreign-owned banking offices, need to be included. Although, in the context of this report, agencies and branches of foreign banks are not, strictly speaking, foreign direct investment, they are a major part of the foreign-owned assets of the U.S. banking system.

There are significant differences in the various institutional forms of organization of foreign banks, and the kind and extent of regulatory oversight and restraints on their banking operations. The following are the three most significant organizational forms used by foreign banks in the United States.

U.S. subsidiaries of foreign banks are banking entities that from a regulatory point of view are equivalent to domestically-owned U.S. commercial banks, with lending based on their own capital. These banks tend to be more heavily oriented toward retail banking activities.

Agencies and branches of foreign banks, by contrast, are integral parts of the foreign parent banking organizations, with lending limits based on the worldwide capital of the parent bank. Agencies and branches of foreign banks are the two most common forms of foreign banking office or entity in the United States, both in number and in size of bank assets. Agencies

differ from branches in that their deposit-taking powers are limited.³

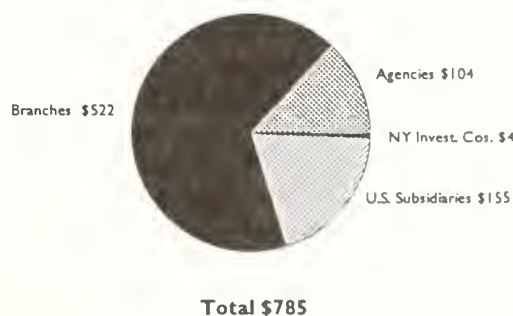
U.S. Offices

Together, branches and agencies of foreign banks account for 80 percent of the total assets of U.S. offices of foreign banks (Figure 10-1). Most of the remainder of these assets is accounted for by the U.S. subsidiaries of foreign banks. In late 1990, the aggregate asset value of all of these U.S. offices of foreign banks totalled \$785 billion, accounting for 21 percent of the \$3.7 trillion in total U.S. bank assets (Figure 10-2). The asset value of these U.S. offices of foreign banks does not include offshore activity of these offices in the Cayman Islands.

Japanese banks clearly dominate the foreign component, owning or controlling 55 percent or \$433 billion of the total \$785 billion foreign assets in U.S. banking. To put the size of the Japanese presence in a Japanese perspective, the total value of Japan's share of U.S. banking assets, \$433 billion at the end of 1990, is not much different in size than the asset value of just one of any of the six biggest banks in Japan at the end of fiscal year 1990 (March 1991). These six banks, in approximate declining order of total asset size, are: Dai-Ichi Kangyo, Sumitomo, Mitsui-Taiyo Kobe, Fuji, Mitsubishi, and Sanwa. The aggregate value of the assets of these banks in Japan at the end of the latest fiscal year (ending March 1991) declined, in yen terms, for the first time since the end of World War II.

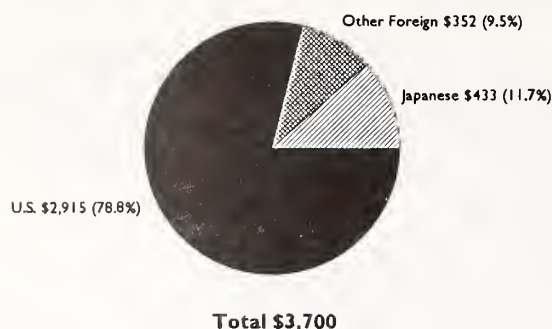
³Henry Terrell, Senior Economist, International Finance Division, Board of Governors of the Federal Reserve System. Testimony before the Task Force on the International Competitiveness of U.S. Financial Institutions, August 2, 1990.

Figure 10-1
U.S. Offices of Foreign Banks, by Type
(Assets in billion dollars, December 1990)



Note: Data include agencies, branches, and subsidiary commercial banks, but exclude Edge corporations.
Source: Federal Reserve Board.

Figure 10-2
Shares of Total U.S. Bank Assets, by Ownership
(Asset value in billion dollars, December 1990)



Source: Federal Reserve Board Call Reports.

Japanese banks in the last few years have increased their share of U.S. business lending by foreign-owned bank offices to over 50 percent, up from about a third earlier in the 1980s. Offices of foreign-owned banks, in turn, accounted for nearly 30 percent of business lending by banks in the United States, which totalled \$630 billion last year.

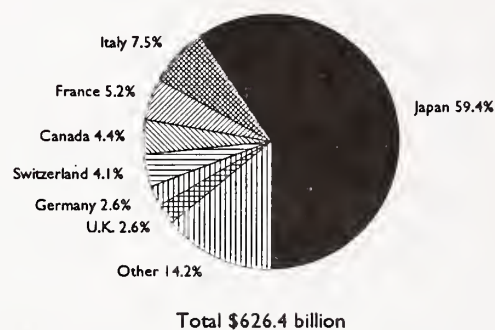
Japan is not the only country with a significant presence in U.S. banking, although in terms of asset size, it accounts for nearly sixty percent of the total foreign bank assets controlled by agencies and branches of foreign banks and, as discussed in the next section, over 41 percent of the assets in U.S. subsidiaries of foreign banks. Italy is a distant second among U.S. bank offices that are agencies and branches of foreign banks, with a 7.5 percent share or \$47 billion in assets, and France is third with a 5.2 percent share or \$32.7 billion in assets. All of the 7 countries shown in Figure 10-3 have a substantial banking presence in the United States, with asset values reported to the Federal Reserve Board for December 1990, of over \$15 billion.

Bank adjustments of asset portfolios, in anticipation of the forthcoming tighter international minimum capital requirements specified by the Basle Committee on Banking Supervision in July 1988, along with other problems in the financial sector, have contributed to a reduction or slowing of lending activity in the United States. The lending activity of offices of Japanese banks in the United States also slowed in 1990, but the restrictive impact of tightened capital requirements on lending appears to have diminished.

According to updated Federal Reserve Board information on the lending portfolios of U.S. agencies and branches of Japanese banks, business lending by these offices of foreign banks in the United States increased nearly \$13 billion during 1990, while business lending by other foreign banks declined in both 1989 and 1990. From

December 1985 to December 1990, nearly all of the increase in foreign bank business lending in the United States, or total lending for that matter, has been by the offices of Japanese banks. These bank offices also accounted for over half of the total increase in business lending in the United States over the same period. While some of this business lending by Japanese banks, no doubt, has been to nonbank subsidiaries of Japanese corporations, the Japanese banks were also significant net lenders to U.S.-owned businesses during the tight credit environment prevailing during the last several years. Business lending by domestic banks has grown relatively slowly since the mid-1980s, but declined in 1990. Since the end of 1988, while assets of branches and agencies of non-Japanese banks grew (up 23 percent compared to Japanese asset growth of 21 percent), lending by these foreign banks did not increase. Since the end of 1990, however, data suggest that lending by foreign banks other than Japanese may be increasing.

Figure 10-3
Shares of Total Branches' & Agencies' Assets of Foreign Banks, by Country, December 1990



Source: Federal Reserve Board.

U.S. Subsidiaries

The assets of U.S. subsidiaries of foreign banks have increased substantially since the early 1970s, but this segment of the foreign presence remains only a relatively small part of the U.S. banking industry. These subsidiaries in December 1990 had assets amounting to less than one-fifth of total foreign-owned U.S. banking assets and only 4.2 percent (\$154.5 billion) of the \$3.7 trillion total of U.S. bank assets. U.S. bank subsidiaries accounted for less than one percent of the number of chartered commercial banks in the United States, according to Federal Reserve Board statistics.

These U.S. bank subsidiaries are, like other offices of foreign banks, located primarily in New York and California. Nearly 80 percent of the total of foreign assets

of these U.S. subsidiaries was owned by bank offices located in New York (50.8 percent) and California (28.7 percent). In these markets, U.S. subsidiaries of foreign banks are relatively and increasingly more visible and important, even though in terms of asset shares (loans and other forms of banking assets), they are of nowhere near the relative importance of the branches and agencies of foreign banks. These subsidiaries accounted for 11.0 percent of total banking assets in California in 1990, up only moderately from 9.2 percent in 1980, and for 9.2 percent of banking assets in New York in 1990, up from a 7.9 percent asset share in 1980.

Consistent with the dominant position of Japanese-owned banks among the world's largest banks, Japan accounts for 41.2 percent of the total assets of U.S. subsidiaries of foreign banks, followed by the United Kingdom (15.9 percent), Hong Kong (12.8 percent), Canada (7.4 percent), Ireland (5.1 percent), and Israel (4.1 percent) (Figure 10-4).

As of the end of 1990, there were 101 foreign-owned U.S. subsidiary banks reporting to the Federal Reserve Board (with 25 of these owned or controlled by Japanese banks). This number reflects the multiple bank entities created to comply with various regulatory restrictions on interstate banking. For example, Harris Bank alone accounted for fourteen of these banking subsidiaries last year.

The largest U.S. subsidiary of a foreign bank, Marine Midland Bank of North America, Buffalo, New York, is owned by the Hong Kong and Shanghai Bank. Other subsidiaries, not in order of size, include Harris Bank (Bank of Montreal), First National Bank of Maryland (Allied Irish Banks), Union Bank, San Francisco (Bank of Tokyo), Bank of California, San Francisco (Mitsubishi

Bank), National Westminster Banks of New York and New Jersey (National Westminster Bank), Bank of the West, San Francisco (Banque National de Paris), Sanwa Bank of California (Sanwa Bank), Sumitomo Bank of California (Sumitomo Bank), and the IJB Schroder Bank and Trust Company (Industrial Bank of Japan).

Many foreign-owned U.S. subsidiary bank names are so well known that foreign presence is very visible, even though the total asset value of these U.S. subsidiaries is small in relation to total foreign bank assets in the United States, and to U.S. bank assets as a whole. By way of comparison to the asset size of Japan's and the world's largest banks, the December 1990 total asset value of U.S. subsidiaries of foreign banks (\$154.5 billion), was only about one-third of the current asset value (end of March, 1991) of any one of the six largest banks in Japan.

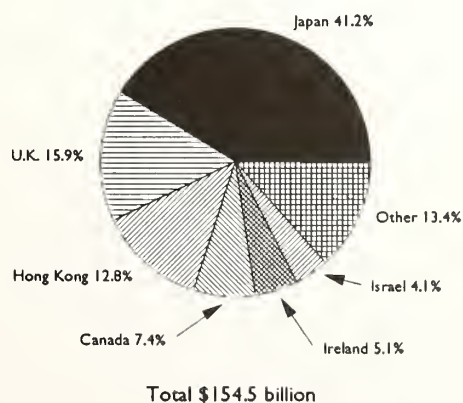
In terms of employment, the relative size of these subsidiary banks also remains small. According to staff of the statistical office of the *American Banker*, there were 86,000 full time equivalent (FTE) jobs at these banks at the end of 1990. This constitutes only 5.7 percent of the 1.5 million jobs (FTE) at the 12,338 chartered commercial banks in the United States in the fourth quarter of 1990.

A Changing Regulatory Environment

From a historical perspective, the likely impact of recently proposed changes in the regulatory treatment of foreign banking is uncertain, but the asset shares of foreign banks in the United States did not seem to be adversely affected by the tighter regulation applied to foreign banks by the International Banking Act of 1978. Under Secretary of the Treasury David C. Mulford observed in June 1991 testimony that no major legislation dealing with foreign banks in the United States had been enacted since the International Banking Act of 1978 (IBA). In this legislation, the Congress adopted the general principle of national treatment by applying the McFadden Act and the general prohibitions of the Glass-Steagall Act to foreign banks in the United States. However, the IBA also grandfathered securities affiliates and interstate branches of foreign banks that existed in 1978, allowing some foreign banks to retain preferential treatment.⁴

A variety of international and domestic regulatory changes affecting banking institutions are either being implemented or have been proposed. It is too early to tell what will be the final outcome. It also remains to be seen whether foreign shares of U.S. banking assets and the kinds of banking activities accounted for by the different types of foreign bank offices will change substantially when the provisions of the Basle Accord become fully

Figure 10-4
U.S. Subsidiaries of Foreign Banks, by Country
(Asset Value Shares, December 1990)



Source: Federal Reserve Board.

⁴David C. Mulford, Under Secretary of the Treasury for International Affairs, Testimony before the U.S. Congress, House of Representatives, Committee on Banking, Finance and Urban Affairs, June 11, 1991, p.8.

implemented, and if regulatory and institutional changes, proposed by the Administration and presently being considered by the Congress, are passed.

Significance of Institutional Differences

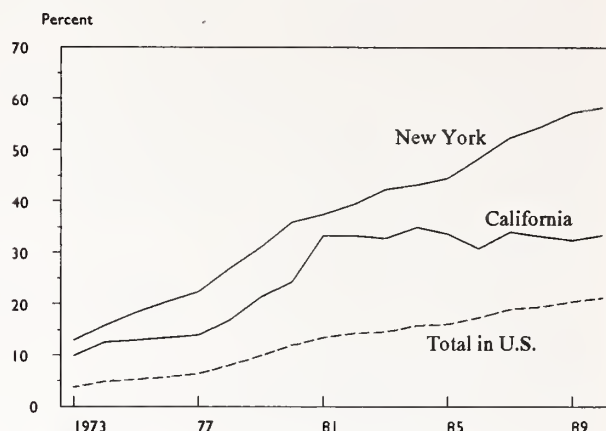
The prevalence of agencies and branches of foreign banks may reflect, in part, competitive advantages that accrue to these offices, because of the level of capitalization made available by their parent banks, or differential capital and regulatory environments faced by the parent banks in home countries as compared with those of U.S.-owned banks or U.S. subsidiaries of foreign banks in the United States. U.S. banking subsidiaries must meet the capital and other requirements set by U.S. banking laws and regulatory authorities.

The advantages which can accrue to the use of branches or agencies, rather than a U.S. subsidiary, are noted in the *LaFalce Report*.⁵

Prior to the new international agreement on capital adequacy . . . , commonly referred to as the Basle Accord, international banks had greater latitude to exploit country differences in capital requirements as a source of competitive advantage.

An earlier change in the regulatory environment faced by foreign banks in the United States did not cause a decline in foreign banking activity. Asset shares of all institutional types of foreign bank offices rose sharply following passage of the International Banking Act of 1978 (Figure 10-5).

Figure 10-5
Foreign Banks' Share of Bank Assets in California
in 1980s Flat, but Illusory
(Shares of total bank assets in each area)



Source: Federal Reserve Board, unpublished share reports, Tables 1, 2, & 3.

U.S. offices of foreign banks exhibit a heavy geographic concentration, with banks accounting for 85.6 percent of total foreign assets located largely in two areas: New York (68.4 percent) and California (17.2 percent). In New York, offices of foreign banks accounted for 58.4 percent of total banking assets and over half of the commercial and industrial (C & I, or business) lending in New York last year. Details on the number of foreign bank offices and asset shares for the ten states with the most foreign bank assets are shown in Table 10-1. In view of the importance of foreign trade, it is not surprising that many

⁵*Op. cit.*, p. 318.

Table 10-1
Offices and Asset Values of Foreign Banks by State
(Values in billion dollars)

State	Number	Percent		Value	Percent	
		Share	Cumm.		Share	Cumm.
New York	342	47.0	47.0	\$536.5	68.4	68.4
California	159	21.9	68.9	135.3	17.2	85.6
Illinois	74	10.2	79.1	66.2	8.4	94.1
Florida	59	8.1	87.2	12.8	1.6	95.7
Georgia	22	3.0	90.2	7.3	0.9	96.6
New Jersey	1	0.1	90.4	7.1	0.9	97.5
Maryland	1	0.1	90.5	6.9	0.9	98.4
Texas	25	3.4	93.9	4.1	0.5	98.9
Oregon	4	0.6	94.5	2.7	0.3	99.2
Washington	7	1.0	95.5	2.2	0.3	99.5
Subtotal	694	-	95.5	\$781.1	-	99.5
U.S. total	727	-	100.0	\$784.8	-	100.0

Source: Federal Reserve Bank, Call Report data.

* Bank assets in billions of dollars, December 1990.

of the major coastal states have some foreign bank presence. In terms of foreign bank assets, the third most important state for foreign banking is Illinois, reflecting, in part, its role as a financial center.

Foreign involvement in the United States banking industry will continue, although market share trends, evident in Figures 10-5 and 10-6 since the early 1970s, may not continue to grow as rapidly if bank functions and assets associated with essentially domestic financial functions of foreign banks, particularly Japanese banks, are repatriated in response to continued relaxation of financial constraints in home markets.

The stable asset share for foreign bank offices in California is due to the distorting effect of the purchase, and subsequent sale, of a single large California bank. Figure 10-5 illustrates the impact of the 1980 purchase of Crocker Bank by Midland Bank of the United Kingdom, and the subsequent sale of these assets to the Bank of America. Excluding the effects of these transactions, reveals a relatively rapid upward rise in the total foreign share of the assets of California bank offices, reflecting a rapid rise in the share of California bank assets accounted for by branches and agencies of foreign banks, and a slower gain in the share held by the largely retail U.S. subsidiary banks.

Reasons for the Increased Foreign Presence in Banking

Although present in the United States for over 100 years, foreign banks recently have become more significantly involved in the U.S. banking industry, particularly in U.S. subsidiary banks and agencies and branches of

foreign banks located in California and New York. There are a number of reasons for the involvement of foreign banks in the United States.

The fundamental reasons for the increased presence of foreign banks in the U.S. include: traditional support of nonbank investors in an attractive economic environment, large external surpluses, and the relatively more open and unconstrained financial regulatory environment in the United States and other financial centers. All three apply in the case of Japan. The initial increase in bank assets in the United States from Japanese banks, beginning in the 1970s and carrying on into the early 1980s, also was influenced by rising dollar-denominated trade financing needs, since the yen has not been widely used in international commerce by Japan or any country.

A more open and less regulated financial environment in the United States and other money centers encouraged the increased presence of international banking assets in the United States during the 1980s. For example, according to one view,

The impact of the regulated interest rates for banks in Japan in this period appears to have provided incentives to Japanese banks to shift some of their lending and interbank business to the United States, including transactions with Japan-based entities, because of regulations on interest paid on deposits.⁶

Many of the reasons for the increased presence in the United States of Japanese banks, now the largest country group of foreign banks, parallel to a remarkable extent the factors that contributed to the postwar increase in the foreign operations of U.S. banks. A key factor was asset redeployment to avoid restrictive regulations.

The onset of American banks' foreign thrust can be attributed to avoidance of U.S. regulations. Particularly important in the 1960s were frequently binding deposit interest ceilings, reserve requirements, and various capital controls and restrictions.⁷

The concentration in individual U.S. states of foreign bank offices noted in Table 10-1, and the large share of assets devoted to wholesale banking, including interbank transfers (included in "Cash and Due From Banks" in Figure 10-7), are consistent with the view that growth of the foreign presence in the U.S. banking industry is no longer so tightly associated with the growth of foreign direct investment in nonbank sectors of the economy.

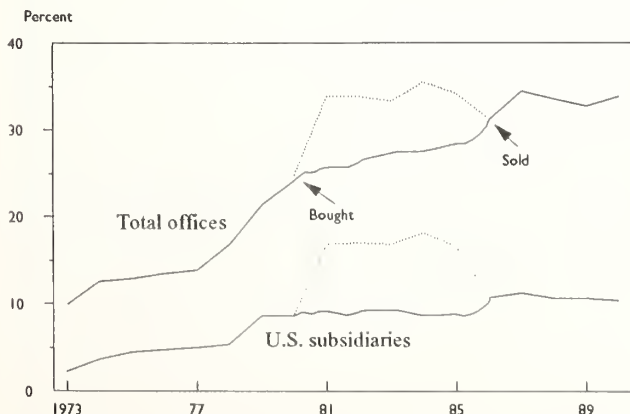
Japanese and other foreign bank offices in the U.S.

⁶Henry Terrell, Testimony before the *LaFalce* Committee, August 2, 1990, mimeo., p.8.

⁷Michael R. Darby, "The Internationalization of American Banking and Finance: Structure, Risk, and World Interest Rates," *Journal of International Money and Finance* (1986), Vol. 5, p.405, n.7.

Figure 10-6

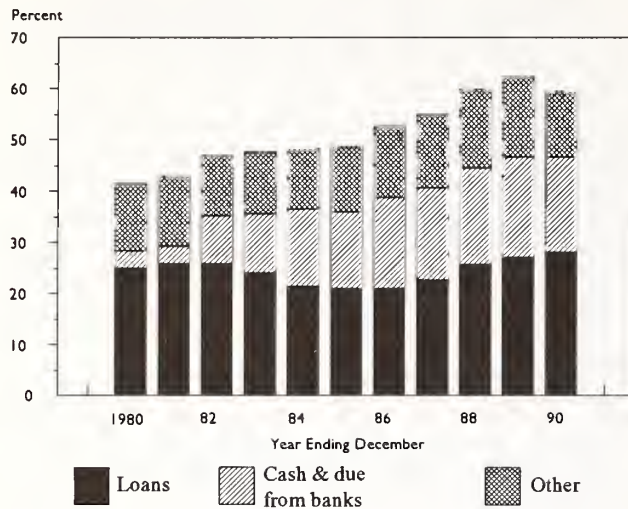
U.S. Offices of Foreign Banks' Share of Bank Assets in California in 1980s Rises Steadily, When Midland Ownership of Crocker Bank Excluded



Note: Total offices also includes branches and agencies.

Source: Federal Reserve Board, unpublished share reports, Tables 3, 6, 9.

Figure 10-7
Japanese Shares of Foreign Bank Branches &
Agencies' Assets in the United States,
by Asset Type



Source: Federal Reserve Board.

do lend to both nonbank U.S. affiliates of home country companies and other borrowers, but it is the banks' increased wholesale banking more than their business lending that is behind the recent rapid expansion of foreign bank assets in the United States.

LINKING BEA AND CENSUS DATA

by Louis J. Moczar*

As mentioned in the Introduction and described more fully in Chapter 1, the "Foreign Direct Investment and International Financial Data Improvements Act of 1990" authorizes the Bureau of Economic Analysis (BEA) to exchange and share its confidential data on foreign direct investment in the United States with the Bureau of the Census and the Bureau of Labor Statistics (BLS) and for the Census Bureau to share its confidential data with BEA. The purpose of this exchange of data -- data collected by different agencies for different purposes -- is to improve the quality of U.S. Government data on foreign direct investment in the United States and to enhance the ability of analysts to assess the impact of that investment on the U.S. economy. Within the framework of this overall objective, BEA and the Bureau of the Census are currently engaged in matching BEA's enterprise-based data on foreign direct investment in the United States with the establishment-based data of the Census Bureau for the year 1987.

The main purpose of linking the BEA enterprise data with the Census Bureau establishment data is to identify U.S. establishments that are owned by foreign direct investors. A successful match will improve the Census and BEA data sets and make it possible to analyze the contribution of foreign-owned firms to the U.S. economy, by state and detailed industry, in terms of employment, employee compensation, sales or shipments, and other measures of economic performance. Linking the two different data sets represents the first time a U.S. statistical agency has undertaken the task of matching its entire data set on foreign direct investment in the United States against the entire industry establishment data set of another U.S. agency. The scope and complexity of the undertaking are seen in the numbers involved: BEA files covering over 8,500 reporters (enterprises) and 21,000 EINs (Employer Identification Numbers) are being matched against the Census Bureau files covering 10 million establishments. Preliminary indications are that about 100,000 of these establishments are foreign-owned.

Enterprise Versus Establishment Data

Economic data are normally collected either on an enterprise or on an establishment basis. Enterprise data -- as in the case of BEA's data on foreign direct investment in the United States -- are collected on a consolidated basis for all of a company's units combined. Establishment data on the other hand -- as in the case of the Census Bureau's data on the Standard Statistical Establishment List (SSEL) -- are collected for each of the individual plants or locations of an enterprise.

When a company has only one unit, the enterprise and establishment are the same. For purposes of industry analysis, the establishment data are generally preferred, because an establishment is much less likely to diversify into other lines of economic activity than an enterprise. Since an enterprise is normally assigned for statistical purposes to the industry or area which accounts for the largest share of its activity (as measured by sales or employment), enterprise data often contain data on activities in areas outside of the enterprise's main activity. Establishment data are far less likely than enterprise data to contain data on activities in "other" areas because individual plants and locations tend to specialize in producing or selling a particular type of product. The successful linking of BEA's enterprise data with the Census Bureau's establishment data will make possible a much more detailed analysis of the activities of foreign-owned firms in the United States.

Timetables and Problems in Previous Data Matching Studies

The one-year timetable for the BEA-Census link project is far shorter than those experienced in previous studies involving the matching of data from different agency record systems. For example, the fastest Internal Revenue Service/Social Security Administration matching project on taxpayer noncompliance took two to three years to complete; other studies took six or more years to complete. Experience gained in a recent study, "A

*Senior Economist, Office of the Associate Director for International Economics, Bureau of Economic Analysis.

Comparative Study of Reporting Units in Selected Employer Data Systems," prepared by the Employer Reporting Unit Match Study (ERUMS) Work Group and issued as a Federal Statistical Working Paper in May 1990, is particularly instructive. This study linked for 1982 the records of employers and their reporting units from three agencies: the Bureau of Labor Statistics (BLS), the Social Security Administration (SSA), and the Internal Revenue Service (IRS). The study was limited to a single state, Texas, and was based on a small sample (401) of employers and reporting units; nevertheless, it took seven years to complete.

The linking and analysis of results were complicated by differences in concept, timing, coverage, and in confidentiality rules in the record systems of the different agencies. Additional difficulties were encountered in the geographic and industry classification for employers. Perhaps the clearest finding of the ERUMS study was that it is not possible to maintain a usable establishment reporting system for multi-unit employers, unless systematic procedures are set up for monitoring employer reporting and updating files for changes in the number, location, and industry of each employer's reporting units. One of the most difficult aspects of the study was matching the EINs for the reporting units in the different reporting systems. Some reporting units had no EINs, others had multiple EINs, and for still others, it was found that their EINs had changed over the years through mergers, acquisitions, and other changes in organization.

The experience of the Census Bureau's Center for Economic Studies, which regularly undertakes small data-matching studies, is also instructive. According to the Center, two major factors play a role: (1) Matching of data from different sources is a relatively new activity, with the result that new problems emerge in each study; and (2) matching establishments to enterprises is particularly difficult, because mailing addresses for establishments reporting in the establishment survey often differ from addresses of enterprises reporting in the enterprise survey. Assuring an accurate match requires a time-consuming review of the data being matched, resulting in lengthy, most often, multi-year, projects.

The task of linking the BEA-enterprise and Census-establishment data sets is a formidable undertaking. Nevertheless, the relatively short timetable for the link project is made possible by extensive planning on the part of both BEA and the Census Bureau and by the availability of the Census organizational file, which provides "mapping" from company to establishment. Other factors that facilitate the work include legislative authority for BEA to have access to Census files, the expertise that has been built up over the years in both BEA and Census in managing large data sets, and the ease of communication between the two bureaus as constituent parts of the Economics and Statistics Administration within the Commerce Department.

Status of Data Link Project

As a result of close cooperation between BEA and the Census Bureau, significant progress has already been made in moving the link project to a timely completion. As of mid-1991, the following items have been completed: a memorandum of understanding between Census and BEA on the sharing of data between the two agencies; a written data request by BEA for Census data to be shared with BEA; a reimbursable agreement between Census and BEA for the portion of the work to be done by Census; and a detailed schedule for the project. In addition, BEA and Census have inspected each other's facilities to ensure the security of the data, and the employees of both agencies have signed sworn statements of nondisclosure of the data. Finally, BEA provided its 1987 data tape to Census, and Census has completed and run the computer programs linking the two data sets (hereinafter referred to as the "mechanical link").

Results of the Mechanical Link

In the mechanical link, about 80 percent of BEA's enterprises (6,991 of 8,577) had one or more EIN's that linked to a Census EIN. For about 85 percent of these linked companies, the differences between agency estimates of employment were under 100 employees. The BEA enterprises linked to over 130,000 separate Census establishments; these enterprises were the larger ones, accounting for over 95 percent of the employment reported in BEA's 1987 benchmark. BEA is optimistic that it can successfully achieve a linkup with the Census data for virtually its entire 1987 file within the time parameters agreed upon by BEA and Census.

Some problems in linking BEA's enterprise-based data and the Census Bureau's establishment-based data came to light when the two data sets were mechanically linked. For example, some of BEA's enterprises linked to too many of Census' establishments. This problem occurred where a given BEA enterprise is majority-owned by another U.S. company and minority-owned by a foreign parent. In such cases, the mechanical link caused the BEA enterprise to be linked to all the establishments of its U.S. majority owner, not just to those of the foreign-owned U.S. company, because the Census Bureau considers a U.S. company and all the companies in which it has majority ownership to be a single company, whereas BEA includes only the foreign-owned part of the company in its data. To resolve such problems, the establishments that are not foreign-owned must be removed.

As a result of work to reconcile BEA's estimates of employment to the sum of employment reported by the individual Census establishments, some large differences were found but were primarily because of different definitions of employment used by BEA and the Census Bureau, and because the two agencies measure employ-

ment at different points in time. BEA collects data on employment by an enterprise as of the end of its fiscal year; if the year-end level of employment is unusually high or low, BEA requires that a "normal" level applicable to the year as a whole be reported. The Census Bureau measures employment of an establishment as of a specific point in time; for this project, this was the pay period that included March 12.

BEA and Census Bureau staff are now engaged in improving the results of the mechanical link and in reconciling the data. This work includes using information on corporate ownership structure from the Census Bureau's SSEL interactive computer system; comparing state-by-state distributions and levels of employment of BEA's enterprise versus the mechanically-linked Census Bureau establishments; contacting BEA enterprises that did not link in order to obtain their EIN's, addresses, or other identification information; and limited use of public domain information.

Publication of Final Results

The work is proceeding according to schedule. BEA and Census plan to publish, in June 1992, the 1987 state-by-detailed-industry estimates of four items: employment, employee compensation, shipments or sales, and the

number of foreign-owned establishments. In addition, data for these items will be classified by country of the ultimate beneficial owner of the U.S. establishment, and comparisons with all U.S. companies will also be shown. (For each of the four items BEA plans to publish, there are more than 40,000 state-by-detailed-industry data cells, excluding subtotals, consisting of more than 800 4-digit industries for each of the 50 states and the District of Columbia.)

In order to avoid the disclosure of data of individual establishments or enterprises, some of the state-by-industry data may have to be suppressed. Despite such suppression, the publication will contain much more detailed information on the operations of foreign-owned U.S. companies that has been available previously.

Future Plans

As soon as the 1987 link is completed, BEA and the Census Bureau will move forward to link data for additional years, and will assess the feasibility of providing data for additional items for the linked entities. Building on experience gained in the current data link project, BEA and the Census Bureau plan to link their respective enterprise and establishment data for the years 1988 and 1989, and expect the results to be available in 1993.

SUMMARY AND CONCLUSIONS

by Sumiye Okubo McGuire*

Over the past decade, international investment flows have increased significantly worldwide. The United States, in particular, has experienced rapid growth in the inflows of foreign capital -- portfolio and direct -- and attracted an increasing share of worldwide foreign investment during the 1980s. This rapid growth in capital inflow occurred primarily as a result of the increase in investment demand relative to saving in the U.S. economy. U.S. gross saving did not keep pace with the increasing U.S. investment demand, while gross saving in other countries, such as Japan and West Germany, was greater than their domestic investment demand. Also, U.S. taxes on business investment were reduced, the U.S. economy grew faster than most other industrial economies in 1983-85, and a restrictive monetary policy raised real interest rates, all of which increased the expected after-tax rate of return on investment. The resultant appreciation of the dollar exchange rate to its February 1985 peak had a negative impact on the U.S. current account deficit which mirrors net capital inflows and reached record levels in the mid-1980s.

Contributing to the inflows of foreign investment in the United States were changes in the global economy which encouraged the international integration of markets and, especially, the growth of relatively open global financial markets. These changes include the deregulation of domestic financial markets, liberalization of financial flows among major industrial countries, and the effects on these markets of advances in communications technologies. Integrated financial markets have greatly facilitated direct and other forms of investments into the United States and elsewhere, as foreign investors have sought the highest rates of return on assets, and foreign investors and financial institutions have sought to participate in growing economies around the world. In addition, the U.S. financial market is sufficiently large to accommodate efficiently massive blocks of funds which flow into foreign national capital markets.

Although foreign capital inflows into the United States remained large throughout the 1980s, in the latter half of the decade, the rate of increase in these inflows slowed, as the gap between U.S. saving and investment

narrowed. After 1985, a number of related changes affected the capital flows, relative rates of return, exchange rates, and trade performance. In the mid-1980s, the rate of U.S. economic growth slowed compared to other industrial countries and the United States eased monetary policy. The gap between U.S. and foreign real interest rates and the after-tax rate of return on U.S. investments declined, and changes in U.S. tax laws removed many of the tax incentives created by the 1981-82 Tax Act to encourage U.S. corporate investment. Economic growth and the business climate abroad also improved, and the dollar exchange rate began to decline. As a result, the growth of U.S. demand for imports fell while foreign demand for U.S. exports rose. Nonetheless, foreign investment continued to flow into the United States, albeit at a slower rate -- reflecting the narrowing, but still significant saving and investment gap.

An increasing proportion of the rising foreign capital inflows into the United States has been inward direct investment, as multinational corporations based in the United Kingdom, West Germany, France, and Japan have expanded their role in the world economy. Indeed, the world stock of inward direct investment increased rapidly during the 1980s among the major industrial countries. As a percent of world stock of inward direct investment, the U.S. share grew over one-and-a-half times between 1980 to 1988. Nonetheless, the role of foreign-owned firms in the U.S. economy -- in terms of proportion of domestic sales, assets, or employment -- remains the lowest, except for Japan, among industrial countries.

Major Investing Countries and Industries

Analysis of available data on U.S. affiliates, which are collected on an enterprise or firm-level basis, can provide information and a means for drawing conclusions about the significance and trends of foreign direct investment in the aggregate. Conclusions about the extent and impact of the activities of U.S. affiliates at the detailed industry level, however, tend to be much more tenuous, in large part because firm-level data are generally not comparable to establishment-level data collected on U.S.

*Director of the Office of Macroeconomic Analysis, Office of the Chief Economist, Economics and Statistics Administration.

industries. Many of the problems hampering analysis can be overcome with the completion of the project currently underway to link data produced by the Bureau of Economic Analysis (BEA), with data from the Bureau of the Census and the Bureau of Labor Statistics (BLS).

The largest stocks of foreign direct investment in the United States (FDIUS) are held by firms from the United Kingdom, Japan, and the Netherlands, followed by Canada and West Germany. European nations, as a group, continue to be the major investor, with the United Kingdom remaining the leader, in terms of growth in direct investment inflow in the 1980s and as a percentage of total stock of FDIUS -- holding nearly one-third of the total in 1989.

In the 1980s, multinational corporations responded not only to the depreciation in the dollar, but also to the perceived need to expand into the U.S. market to improve their ability to compete there. The United Kingdom has long ranked as the largest foreign investor. The rapid growth of U.K. firms' FDIUS can be partly attributed to special circumstances: specifically, the deregulation of financial markets -- the "Big Bang" in 1989 -- which encouraged mergers and acquisitions by, and of, British companies; the expansion of U.S. investment banks in London which facilitated acquisitions of U.S. firms; and changes in U.K. tax and regulatory policies which increased British firms' cash flow and profits. Japan moved up rapidly to be the second largest source of inflows of FDIUS in 1986, and to be the second largest holder of accumulated investment stock in 1988, as a number of factors, including the increase in its saving surplus, financial market deregulation, elimination of capital controls, and rising trade balances, encouraged outward investments. In 1989, Japan was the largest U.S. source of inflows of foreign direct investment, surpassing even the United Kingdom. Most Japanese-owned U.S. investments went into wholesale trade, manufacturing, and real estate. While Canada, the largest U.S. trading partner, doubled its direct investment in the United States from 1985 to 1989, it did not keep pace with Europe and Japan.

The principal national investors in the U.S. economy differ according to the sector, as measured by foreign direct investment position:

- o Manufacturing continues to be the largest sector of foreign direct investment. In 1989, the major investors were companies from the United Kingdom, Japan, the Netherlands, Germany, and France.
- o The second largest sector is wholesale and retail trade, with the major investors in this sector from Japan and Canada.
- o Real estate is the third largest industry sector of FDIUS. Over 80 percent of FDIUS in real estate is held by owners from Japan, the United Kingdom, Canada, the Netherlands, and the Netherlands Antilles.

- o The finance and insurance sector was the fourth largest, with most of the direct investments coming from Japan, the Netherlands, Switzerland, Canada, and the United Kingdom -- countries with major financial markets.
- o The FDIUS position in banking rose steadily in the 1980s with Japan, Italy, Hong Kong, and the United Kingdom being the dominant sources.
- o The amount of FDIUS in petroleum leveled off after 1987, contributing to a decline in its share of total FDIUS. Canada remains the dominant source country.

Contributions of FDIUS to the U.S. Economy

Although the benefits and costs of foreign investment to the U.S. economy cannot be measured with any precision, currently available information indicate that the United States, in several major respects, has benefited from the large inflow of capital from abroad during the 1980s. Benefits can be viewed at the level of the total economy and at the industry level. For the total economy, the large capital inflows from abroad filled the gap between domestic saving and investment, and helped meet U.S. domestic investment needs, which rose throughout the 1980s. These capital inflows peaked in 1987, in terms of share of U.S. gross domestic investment, and declined in share in 1988 and 1989. Without these capital inflows from abroad, gross investment in the United States in the 1980s would have been substantially lower. This lower level of U.S. investment would have been reflected in reduced GNP growth in the 1980s.

Benefits from FDIUS

Foreign direct investment, which has been a rising portion of capital inflows, has also provided benefits. Viewed at the industry and firm level -- U.S. affiliates of foreign firms are part of U.S. productive assets. Their output of goods and services is included in the U.S. gross domestic product, their workers are included in the total U.S. employment of workers, and these firms and workers contribute to local, state, and federal revenues. Moreover, their exports and imports of goods and services are included in U.S. aggregate foreign trade. Their research and development expenditures are part of total U.S. investment in technology, and the results of their R&D represent U.S. technological progress.

Data indicate that U.S. affiliates, on average, have made a small, but growing contribution to the U.S. economic output and employment, and in several sectors, they account for an important share of the total. U.S. affiliates' share of total U.S. gross product (value added) averaged

slightly over four percent in the 1980s. Moreover, they have increased their share of total U.S. gross product during this period. In real terms, the increase in the gross product by U.S. affiliates in manufacturing was nearly four times greater than by all U.S. manufacturing firms between 1980 and 1987. This contribution of U.S. affiliates to U.S. output was mainly in manufacturing and wholesale trade, which accounted for 58 and 14 percent, respectively, of the U.S. affiliates' total gross product. Their output is much more concentrated in these two sectors than it is in all U.S. business, which had 24 percent of output in manufacturing and 9 percent in wholesale trade.

Non-bank U.S. affiliates provided a rising share of U.S. employment, tripling their employment compared to an increase of slightly over one-fourth by all U.S. business between 1980 and 1988. Manufacturing accounted for nearly one-half of U.S. affiliates' total employment, followed by a smaller share in wholesale and retail trade. Within manufacturing, chemicals was the largest employer, followed by electrical and electronic products. Canadian- and British-owned businesses in manufacturing were the largest of the affiliates' employers, followed by Japanese- and German-owned affiliates. Compensation per worker for foreign-owned firms was also higher than for all U.S. business -- \$30,517 for employees of U.S. affiliates, compared to \$25,480 for all U.S. workers in 1988.

Moreover, manufacturing productivity grew more rapidly in U.S. affiliates than in the U.S. manufacturing sector as a whole, rising between 1980 and 1987 by 40 percent, compared to a 32 percent rise for all U.S. manufacturing. This high productivity gain in manufacturing can be attributed in part to the more rapidly rising (although considerably higher) capital intensity, on average, of U.S. affiliates compared to U.S. firms. Among the U.S. affiliates, Japanese-owned firms tended to have the highest capital intensity.

U.S. affiliates have also contributed to technology investment and progress. Two indicators provide evidence of this contribution. First, license and royalty fees paid by U.S. affiliates suggest a rapid rise in technology inflow to them from abroad. The second indicator, the ratio of R&D spending to gross product, shows that the ratio for U.S. affiliates in manufacturing, which represent 85 percent of all U.S. affiliates' R&D spending, rose from 4.5 percent in 1977 to 7.6 percent in 1987, whereas the ratio for all U.S. manufacturing averaged 6.5 percent for over this period.

Economic Costs of FDIUS

Questions about the economic costs to the U.S. economy of foreign direct investments arise out of concerns that foreign owners may not have the same interests as U.S. owners or workers. The data suggest that foreign-

owned affiliates do not appear to have significantly different interests from U.S. citizens and U.S.-owned firms. In fact, U.S. affiliates resemble or compare favorably to U.S. firms in the same industries, in terms of many of the measures discussed earlier, such as capital intensity, compensation per employee, and research and development expenditures. These measures suggest that foreign direct investment has been beneficial to the U.S. economy.

However, any direct investments by firms -- domestic or foreign -- produces winners and losers. Such investments are often accompanied by a restructuring of the firm and/or relocation of production, producing gains for some and losses for others. Many of these benefits and costs are difficult to measure or quantify. For example, the data on FDIUS do not permit an easy examination of changes within an industry and within the firm and the possible gains or costs related to these changes.

The data also do not allow close analysis of the economic strategies of firms. Specifically, concerns that foreign owners are bringing to the United States lower value added production, while retaining high value added, sophisticated operations at home, are not easily addressed with currently available information. Anecdotal evidence suggests that foreign investors, at least in the consumer electronics industry, have moved from initially low value-added production to high value-added manufacturing, but systematic analysis requires information about the activities of a set of firms over time. Similarly, questions about changes in the nature of competition within an industry that might result from increased foreign direct investment, and the impact on costs to U.S. consumers and producers, cannot be readily assessed using currently available data. Changes in the concentration within an industry could be examined once the data link project has been completed if disclosure issues can be resolved.

Lastly, concerns about U.S. firms sharing and particularly losing access to technologies deemed critical to U.S. national security are difficult to evaluate with available information. The U.S. government has in place a mechanism for determining the national security impact of each proposed foreign acquisition of a U.S. firm, including the technologies controlled by it. The detailed industry data that will become available from the data link project may serve to help to understand how a proposed acquisition or merger might change relationships and competition within an industry, and how it might influence foreign control over a given technology or set of technologies.

U.S. Affiliates' Trade

Although the trade data for U.S. affiliates are not entirely comparable to data for all U.S. trade, they are sufficiently close to draw some useful comparisons. U.S. affiliates' trade is classified by industry of major activity of each affiliate, and this classification may not represent

the appropriate classification of the products actually exported and imported. U.S. trade accounts, on the hand, provide data classified by products exported and imported.

The data indicate that in 1988, U.S. affiliates accounted for 19 percent of total U.S. merchandise exports, and one-third of total U.S. imports. On average, trade by U.S. affiliates represented a large and growing share of the U.S. trade deficit after 1984. Most of this growth in the deficit can be accounted for by U.S. affiliates in the wholesale trade sector, which had a rapid growth in imports and a slow, irregular decline in exports between 1982 and 1987. U.S. affiliates in wholesaling in 1988 accounted for 73.1 percent of total imports by U.S. affiliates and 58.6 percent of total U.S. affiliates' exports, and approximately 83 percent of the U.S. affiliates' aggregate trade deficit. The wholesaling industry often merely distributes foreign-made products, and thus, these results are not particularly surprising. For manufacturing affiliates, on the other hand, exports remained relatively flat from 1980 to 1986, and rose sharply in 1987 and 1988, reflecting their apparent increased price competitiveness following the major U.S. dollar devaluation from its February 1985 peak. Imports by U.S. manufacturing and non-manufacturing affiliates continued to rise unabated by these changes.

The major share of U.S. affiliates' foreign trade is with their own foreign parents, with the parents' share of their imports (76 percent) far larger than of their exports (42 percent) in 1988. The share of imports by U.S. affiliates from foreign parents rose from 62 percent in 1982 to 76 percent in 1988. The extent of U.S. affiliates' dependence on imports from parents was highest for affiliates in wholesaling (81 percent of total imports), compared, for example, with averages for those in all manufacturing industries (69 percent) and in the petroleum industry (46 percent). The percentage for U.S. affiliates in motor vehicle and parts manufacturing (85 percent) was much higher than the average for those in all manufacturing industries (69 percent). These results are consistent with past empirical studies of trade and investment which have shown that foreign direct investment abroad leads to increased exports from the investing countries; specifically, U.S. investment abroad has led to increased exports from the United States by U.S. multinational corporations.

The share of U.S. affiliates' exports going to their parents was much smaller than the share of imports from parents. The export shares varied irregularly from 1977 to 1988, showing no general trend and reaching 41 percent in 1988. Japanese-owned affiliates increased the proportion of their exports to their parents from 37 percent in 1980 to 42 percent in 1988. The proportion of imports from parents also rose from 36 to 48 percent during the same period.

Industry Case Studies

The five case studies of specific industries -- electronics, automobiles, steel, chemicals, and banking -- highlight the importance of inward foreign direct investment to the U.S. economy, and support the general conclusions about their contribution to the U.S. economy. They provide some general observations about U.S. affiliates' performance relative to U.S. industries as a whole. However, they also draw attention to the limitations of data on FDI in the United States for detailed industry analysis, and on conclusions about the competitiveness of U.S. affiliates relative to U.S. businesses in individual industries.

These industry studies all show that foreign firms have been actively increasing their participation in each of the five industries examined, and indicate that this participation has been generally beneficial to the U.S. economy. However, determining the exact nature and extent of these benefits is not possible without more detailed data. Related costs are also difficult to quantify. A better picture of their role in the U.S. economy will be available once the data link project is completed.

The case studies provide some general conclusions across industries in terms of capital needs, employment, foreign trade, technology, and industrial organization.

Capital Needs

The case studies point out the role of foreign direct investment in providing needed capital to U.S. manufacturing. The steel industry is the clearest example of the case in which U.S. firms had difficulty obtaining domestic sources of financing to upgrade aging facilities.

Employment

The case studies indicate that the numbers of workers employed by U.S. affiliates have been increasing in each of the five industries. However, this rise in employment may be as much a reflection of their increased acquisitions of existing U.S.-owned firms as of their own increased output. In addition, compensation per employee in each of the five industries appears to be at least comparable to the U.S. average, and appears to be higher in some industries, such as electronics.

Foreign Trade

The case studies support evidence from analysis of aggregate data that much of the affiliates' trade, both exports and imports, occurs between them and their foreign parents.

The industry studies highlight the importance of voluntary export restraint agreements by foreign governments in encouraging foreign direct investment, in at least two of the five industries -- automobiles and steel. Volun-

tary export restraint agreements appear to be an important factor in foreign firms' decisions to invest in the United States, and have possibly speeded the process, as foreign firms sought to retain and increase access to the large and profitable U.S. market.

Technology

The studies suggest that U.S. affiliates have been contributors to the advance of technology in U.S. industry. The U.S. affiliates' ratio of R&D spending to sales rose between 1980 and 1988 for electronics and chemicals. In addition, in chemicals, the ratio for U.S. affiliates was higher than the average for the U.S. chemical industry as a whole. Although the ratios of R&D expenditures to sales for U.S. affiliates in the steel and automobile industries were negligible compared with all U.S. firms in these industries, in many cases U.S. affiliates transferred in important manufacturing and process technologies that were ahead of the state-of-the art in the United States.

In the automobile industry, anecdotal evidence suggests that U.S. affiliates of foreign firms appear to have encouraged the diffusion of new technologies, including speeding the adoption of robotics to improve the efficiency of the manufacturing processes.

There is evidence, too, that, besides bringing cutting-edge technologies to the United States, U.S. affiliates have acquired certain U.S. firms to gain access to these firms' advanced technologies in specific industries, such as semiconductor materials and equipment, biotechnology, and robotics.

Industrial Organization

Despite public concerns about the lack of freely competitive procurement of inputs by Japanese-owned affiliates, no apparent transfer of the Japanese keiretsu-type organization to their U.S. operations could be identified. However, horizontal and vertical (upstream and downstream) linkages appear to have been established between U.S. affiliates that mirror to some extent those in the parents' home country, at least in the automotive industry.

In the U.S. automotive industry, which has a high proportion of Japanese investment, such linkages appear between U.S. affiliates of Japanese-owned auto producers and Japanese-owned parts suppliers and wholesalers. Nonetheless, U.S. automobile producers have similar types of relationships with their suppliers. The major difference appears to be the way in which contracts tend to be made and relationships established and maintained; that is, prices of parts and components under the U.S. system have been the determining factor, whereas quality control (minimizing numbers of defective parts), just-in-time delivery, and dependability of supply have been more important under the Japanese system.

In the electronics sector, the vertical linkages ob-

served appear to be, in large part, a function of the size of corporation. Very large European and Japanese corporations have each made direct investments in final products and in components and materials, vertically integrating their operations in the United States. Such vertical integration is not apparent for smaller foreign investors.

Data Problems and the Data Link Project

Analysis of the operations of U.S. affiliates has been seriously hampered by two types of problems. Foremost among these problems is that BEA data are reported on an enterprise basis. While this basis has not hindered analyzing U.S. affiliate operations in the aggregate, it has limited analysis at the detailed industry level. This limitation will be reduced by the major effort underway to link BEA data to data of the Bureau of the Census and BLS. The second type of problem relates to assessing how U.S. affiliates of foreign firms compete with U.S.-owned firms in the U.S. market. Such assessments require detailed firm-level data for both U.S. affiliates and U.S.-owned firms on pricing behavior, marketing strategy, technology strategy, quality, and the means by which firms establish vertical and horizontal linkages in order to improve their competitiveness. The data link project will not provide information to examine these questions.

The linking of BEA data to Census and BLS data will improve the basis for assessing the role of U.S. affiliates of foreign-owned firms in the U.S. economy. The project will provide data on U.S. affiliates that are comparable with other U.S. industry data, so that their relationship can be analyzed in more detail by industry and state by industry, than was possible in this, the first annual report on FDIUS in this series. The data link will enable tabulation of information on U.S. affiliates on an establishment or plant basis, in addition to an enterprise basis.

The linked data will provide an improved means of looking at the actual operations of the U.S. affiliates and their performance in a given industry without having to include in the industry the secondary industry activities of the companies that are outside their primary industry. For example, currently available data make distinguishing between manufacturing versus wholesaling difficult for those affiliates engaged in both types of activities.

The linked data will provide consistent bases for gauging the performance of U.S. affiliates against U.S. industry totals or at the detailed industry level. The market shares, or market penetration, of U.S. affiliates of foreign firms at the detailed industry level can be estimated. Also, it should be possible to determine how much of the employment is in existing plants acquired, or new plants established in the future by foreign investors.

Examination of performance of U.S. affiliates in groups of related industries can be made, with more representative data; for example, the automotive industry

as defined by the 3-digit SIC category includes only automobile assembly, and closely related activities, but excludes the production of automotive glass, tires, and seats, which are classified in completely different SIC categories. Yet, an assessment of foreign direct investment in the automotive industry, without considering these related activities, would be ignoring an important part of this industry. Analysis of these related activities is not possible with the enterprise-level data as currently reported to BEA.

The linked data will permit an examination of actual activities by regional or state location. BEA currently collects data on affiliates' manufacturing employment by state or region, but does not collect data for more detailed industry sectors by state or regions. Systematic information by industry for individual plants or establishments disaggregated by location are not currently available.

The initial results for the year 1987 are expected by June 1992, for data on employment, employee compensation, shipments or sales, and number of foreign-owned establishments at the state level and by country of ultimate owner. Data for 1988 and 1989 are expected in 1993.

BEA and Census are examining the feasibility of providing data for additional items for the linked entities. For example, for establishments that report on the Census Bureau's Annual Survey of Manufactures, BEA and Census might be able to show data on: value of products exported, value added, capital expenditures, and employer's cost for worker fringe benefits. From these data, and those to be published next year, it will be possible to calculate important operating ratios for the manufacturing estab-

lishments of U.S. affiliates. BEA and Census will also explore linking BEA's data to other Census Bureau data sets.

Data are not available for R&D spending at the establishment level; such data are available only at the enterprise level for U.S. firms as well as U.S. affiliates of foreign firms. The data will be limited by the frequency, representativeness and other characteristics of the agencies' surveys of firms. Coverage will not be expanded backward to cover the entire 1980s. Moreover, a larger than currently available share of the data cells provided may not be reportable in order to prevent disclosing individual company data as required by law, to the extent that the number of reporters in each cell is reduced, especially at the state by detailed industry level.

Outlook

The data link project will facilitate an examination of the role of U.S. affiliates of foreign firms by the industry of establishment, and thus, enhance the usefulness of subsequent reports in this series on FDIUS. To maximize the usefulness of the next report, its production should follow the publication of updates of U.S. affiliate financial and operating data and more importantly, of the expanded linked data, which are scheduled to be published in August and June 1992, respectively. Production of the next report probably should, therefore, be scheduled for late Fall 1992 or early 1993, rather than the Summer or Fall of 1992, to allow time to analyze the data and prepare the report.

APPENDIX A

Glossary of Foreign Direct Investment Terms

Following are important terms describing foreign direct investment and the operation of foreign-owned affiliates in the United States as used in this report and by the U.S. Department of Commerce, Bureau of Economic Analysis:

Benchmark year

The year for which BEA conducts a benchmark survey, or census, of foreign direct investment in the United States. Benchmark surveys are normally taken once every five years. They are BEA's most comprehensive surveys of FDI, both in terms of the amount of detail collected and number of firms covered. They are designed to cover the universe of U.S. affiliates in value terms. For example, in the 1987 benchmark survey, all U.S. affiliates of foreign persons were required to report operating, financial, balance of payments, and direct investment position data if the affiliate's total assets, sales, or net income were at least \$1 million or if the affiliate owned 200 or more acres of U.S. land.

Although the affiliates required to report account for only 66 percent of the total number of affiliates in the universe, they accounted for 99.0 percent of the assets, 99.9 percent of the sales, 100.7 percent of the net income, and 96.3 percent of the acres of U.S. land owned by all U.S. affiliates. (The percentage for net income exceeded 100.0 percent because exempt affiliates had, in the aggregate, a net loss for the year.

BEA's quarterly and annual direct investment surveys are less comprehensive and cover only a sample of companies. Reporting in the annual survey is limited to affiliates with more than \$10 million in total assets, sales, and net income (positive or negative), and fewer operating and financial details are required. Reporting in the quarterly survey is limited to affiliates with more than \$20 million in assets, sales, and net income. Data from the sample surveys are linked to data from the most recent benchmark survey and, for most items, are expanded to universe levels.

In order to promote consistency and comparability between the enterprise data collected by BEA and the establishment data collected by the Census Bureau and to enhance their analytical usefulness, the timing of benchmark surveys of foreign direct investment in the United States has been shifted to coincide with the economic

censuses conducted by the Census Bureau; the first such year was 1987.

Enterprise

The data collected and reported to BEA by U.S. affiliates are for the fully consolidated affiliate enterprise. In many instances, an affiliate will comprise two or more establishments or plants. Data reported by some other agencies on business operations within an individual industry are sometimes based on the operations of individual establishments.

Foreign Direct Investment in the U.S.

Foreign investment in the United States is classified as foreign direct investment where ownership or control, directly or indirectly, by a foreign person amounts to 10 percent or more of the voting securities of an incorporated U.S. business enterprise, or an equivalent interest in an unincorporated U.S. business enterprise. Such a business is referred to as a foreign-owned U.S. affiliate.

Foreign-Owned Affiliate in the U.S.

A business in the United States in which there is sufficient foreign investment to be classified as direct foreign investment. To determine fully the foreign owners of a U.S. affiliate, three entities must be identified: the foreign parent, the ultimate beneficial owner, and the foreign parent group. All these entities are "persons" in the broad sense: thus, they may be individuals; business enterprises; governments; religious, charitable, and other nonprofit organizations; estates and trusts; and associated groups.

A U.S. affiliate may have an ultimate beneficial owner (UBO) that is not the immediate foreign parent; moreover, the affiliate may have several ownership chains above it, if it is owned at least 10 percent by more than one foreign person. In such cases, the affiliate may have more than one foreign parent, UBO, and foreign parent group.

Foreign Parent

The first foreign person outside the United States in an affiliate's ownership chain that has direct investment in the affiliate.

Foreign Parent Group (FPG)

In many cases, a U.S. affiliate is only one unit in a global network of corporate affiliations. Thus, a U.S. affiliate may have a foreign parent who, in turn, is owned by a direct investor of a third country or who has affiliates in other countries.

Foreign parent group consists of (1) the foreign parent, (2) any foreign person, proceeding up the foreign parent's ownership chain, that owns more than 50 percent of the person below it, up to and including the UBO, and (3) any foreign person, proceeding down the ownership chain(s) of each of these members, that is owned more than 50 percent by the person above it. In the U.S. balance of payments, transactions of U.S. affiliates with all members of the FPG, not only transactions with foreign parents, are shown as transactions with "affiliated" foreigners. Also, equity and debt positions in the affiliate held by all members of the foreign parent group are included in the foreign direct investment position in the United States.

The following diagram illustrates relationships and transactions that could occur between a U.S. affiliate and members of the FPG. Company A is a U.S. chemical company owned 50 percent by Company B, a Netherlands finance affiliate, which is owned 100 percent by Company C, a French manufacturing company. No single investor has more than 50 percent ownership of Company C. Like Company B, Company D, a British company, is owned 100 percent by Company C. Therefore, Company A's foreign parent is Company B; Company A's UBO is Company C. Company A's FPG consists of Companies B, C, and D. Company D is in the FPG because, even though it does not have an ownership interest in the U.S. affiliate, it is more than 50 percent owned by Company C, the UBO.

If Company A receives a loan from Company D, the transaction would be treated as a direct investment transaction in the balance of payments accounts, because Company D is part of the FPG. The flow would be recorded as an intercompany debt inflow from the United

Kingdom.

If Company A pays dividends to Company B, the transaction would be recorded as a direct investment income payment between the United States and the Netherlands in the U.S. balance of payments because the dividends are paid directly to the foreign parent (not the UBO). If the Netherlands company (Company B) then passes on the dividend to the French UBO (Company C), this transaction would not be a U.S.-to-foreign transaction; it is a foreign-to-foreign transaction and as such is not recorded in the U.S. balance of payments. (It would, however, be recorded in the balance of payments accounts of France and the Netherlands).

The direct investment position of both Company B and Company D are equal to the book value of their cumulative debt or equity transactions with Company A over time, and are calculated at yearend. For Company B, the position is equal to its equity (including reinvested earnings) in Company A plus any net outstanding loans by it to Company A. Company D has an investment position with Company A equal to the remaining balance of the loan. The position of Company C in Company A is zero because it has no direct equity interest in Company A and has made no loans to Company A.

Industry of Affiliate

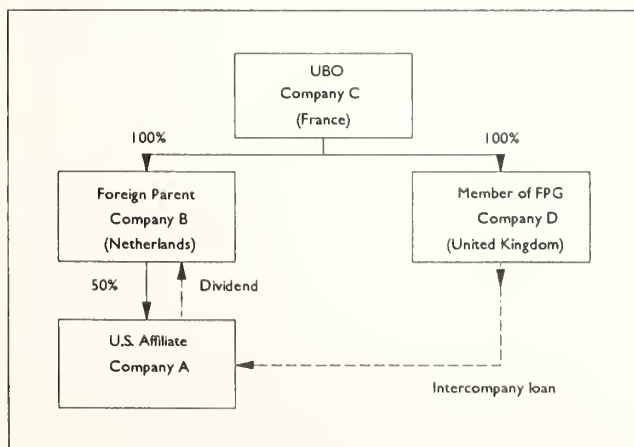
Data on the operations of U.S. affiliates owned by foreign investors are classified in BEA data both in terms of the "industry of affiliate" and the "industry of sales".

Classification of an affiliate by "industry of affiliate" is based on a three-stage procedure: first, the major industry group accounting for the largest percentage of its sales is determined, (a) agriculture, forestry, and fishing, (b) mining, (c) petroleum, (d) construction, (e) manufacturing, (f) transportation, communication, and public utilities, (g) wholesale trade, (h) retail trade, (i) finance, insurance, and real estate, and (j) services. Second, within the group the two-digit International Surveys Industry (ISI) in which sales are largest is determined. Third, within the two-digit industry the three-digit ISI industry in which sales are largest is determined. This procedure is designed to avoid assigning an affiliate to a two-digit subindustry that is outside its major industry, or a three-digit subindustry outside its two-digit industry.

Classification by "industry of sales" of affiliate sales and employment data shows not only such data for the affiliate's primary industry, but also for its associated secondary industries. This classification method roughly approximates the distribution that would result if the data were reported and classified by industry of establishment.

Nonbank Affiliate

An affiliate classified in an industry other than banking in the ISI coding system.



Ultimate Beneficial Owner (UBO) of an Affiliate

The "person" proceeding up the U.S. affiliate's ownership chain, beginning with and including the foreign parent, that is not owned more than 50 percent by another person. The UBO consists only of the ultimate owner; other affiliated persons are excluded. If the foreign parent is not owned more than 50 percent by another person, the foreign parent and the UBO are the same. The UBO, unlike a foreign parent, may be a U.S. person.

APPENDIX B

Legislative Request for Study

This study on foreign direct investment in the United States was required under the provisions of Section 3(a) of the "Foreign Direct Investment and International Financial Data Improvements Act of 1990." The data link project undertaken by the Bureau of Economic Analysis, the Bureau of the Census, and the Bureau of Labor Statistics, referred to in this report, was required by Section 5 of the Act. The following reprints Sections 1 through 10 of the Act.

PUBLIC LAW 101-533—NOV. 7, 1990

FOREIGN DIRECT INVESTMENT
AND INTERNATIONAL FINANCIAL
DATA IMPROVEMENTS ACT OF 1990

Public Law 101-533
101st Congress

An Act

Nov. 7, 1990
[S. 2516]

Foreign Direct
Investment and
International
Financial Data
Improvements
Act of 1990.
Business and
industry.
22 USC 3141
note.
22 USC 3141.

To augment and improve the quality of international data compiled by the Bureau of Economic Analysis under the International Investment and Trade in Services Survey Act by allowing that agency to share statistical establishment list information compiled by the Bureau of the Census, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Foreign Direct Investment and International Financial Data Improvements Act of 1990".

SEC. 2. FINDINGS.

The Congress makes the following findings:

(1) The United States Government collects substantial amounts of information from foreign owned or controlled business enterprises or affiliates operating in the United States.

(2) Additional analysis and presentation of this information is desirable to assist the public debate on the issue of foreign direct investments in the United States.

(3) Information collected from foreign owned or controlled firms by the Bureau of Economic Analysis has serious analytical limitations because it is largely collected on an "enterprise" basis that does not permit an adequate analysis by industry groupings.

(4) Statistical and analytic comparisons of the performance of foreign owned or controlled businesses operating within the United States with other business enterprises operating within the same industry can be accomplished under sections 2(b) and 5(c) of the International Investment and Trade in Services Survey Act, and under Executive Order Numbered 11961, without the need to collect additional information, by sharing with other authorized Government agencies the employer identification numbers maintained by the Bureau of Economic Analysis.

(5) Public disclosures of confidential business information collected by the United States Government relating to international direct investment flows could cause serious damage to the accuracy of the statistical data base.

(6) The General Accounting Office may have limited access to Government data on foreign direct investment.

22 USC 3142.

SEC. 3. REPORT BY SECRETARY OF COMMERCE.

(a) ANNUAL REPORT ON FOREIGN DIRECT INVESTMENT IN THE UNITED STATES.—Not later than 6 months after the date of the enactment of this Act, and not later than the end of each 1-year period occurring thereafter, the Secretary of Commerce shall submit to the Committee on Energy and Commerce, the Committee on Ways and Means, and the Committee on Foreign Affairs of the House of Representatives, to the Committee on Commerce, Science,

and Transportation of the Senate, and to the Joint Economic Committee of the Congress a report on the role and significance of foreign direct investment in the United States. Such report shall address the history, scope, trends, market concentrations, and effects on the United States economy of such investment. In addition, the Secretary of Commerce shall, if requested by any such committee, appear before that committee to provide testimony with respect to any report under this subsection.

(b) SOURCES OF DATA.—In preparing each report under subsection (a), the Secretary of Commerce, or the Secretary's designees, shall consider information collected by—

(1) the Bureau of Economic Analysis under the International Investment and Trade in Services Survey Act (22 U.S.C. 3101 and following);

(2) the Bureau of the Census on industry, manufacturing, research and development, and trade, under title 13, United States Code;

(3) the Bureau of Labor Statistics pertaining to information collected under the International Investment and Trade in Services Survey Act, but only to the extent that such information is in a form that cannot be associated with, or otherwise identify, directly or indirectly, a person, including any enterprise or establishment;

(4) the Secretary of Commerce or the Secretary's designee pursuant to section 2 of Executive Order 11858 of May 7, 1975;

(5) the United States Department of Agriculture under the Agricultural Foreign Investment Disclosure Act of 1978 (7 U.S.C. 3501 and following);

(6) the Department of the Treasury under section 6039C of the Internal Revenue Code of 1986 (26 U.S.C. 6039C), but only to the extent that such information is in a form that cannot be associated with, or otherwise identify, directly or indirectly, a person, including any enterprise or establishment;

(7) the Department of Energy under section 657(8) of the Department of Energy Organization Act (42 U.S.C. 7267(8)), but only to the extent that such information is in a form that cannot be associated with, or otherwise identify, directly or indirectly, a person, including any enterprise or establishment;

(8) other Federal agencies not referred to in paragraphs (1) through (7), but only to the extent that such information is in a form that cannot be associated with, or otherwise identify, directly or indirectly, a person, including any enterprise or establishment;

(9) foreign governments and agencies thereof; and

(10) private sector sources.

(c) ANALYSES.—(1) The analysis in each report prepared under subsection (a) shall, to the extent of available data, compare business enterprises controlled by foreign persons with other business enterprises in the United States with respect to employment, market share, value added, productivity, research and development, exports, imports, profitability, taxes paid, and investment incentives and services provided by State and local governments (including quasi-governmental entities).

(2) Each such analysis shall be done by significant industry sectors and geographical regions, except that information shall not be presented in a way in which any person, including any business enterprise or establishment, can be identified. The restriction con-

tained in the preceding sentence on presentation of information does not apply to information that is obtained from foreign governments or agencies thereof and that has been published pursuant to the lawful disclosure of the information. To the extent that data are available, each such analysis shall include an analysis, together with current levels and trends, of the number and market share of business enterprises at least 10 percent of the voting securities or other evidences of ownership of which are owned or controlled by a foreign person, and of the number and market share of the establishments of such business enterprises, that are engaged substantially in the production or coproduction of any critical technologies included in the most recent plan submitted to the Congress under section 2368 of title 10, United States Code, or included in the most recent report submitted to the President under section 603 of the National Science and Technology Policy, Organization, and Priorities Act of 1976.

22 USC 3143.

SEC. 4. REPORTS BY GENERAL ACCOUNTING OFFICE.

(a) **IN GENERAL.**—The Comptroller General, to the extent permitted by law, including section 8 of this Act, is authorized to review the information described in section 3(b) for purposes of preparing the report required under subsection (b) of this section. Nothing in this section authorizes disclosure of any individually identifiable data or information in any form that can be associated with or otherwise identify, directly or indirectly, any person, including any enterprise or establishment.

(b) **REPORT.**—Not later than 5 months after each report issued by the Secretary of Commerce under section 3, the Comptroller General of the United States shall submit to the Committee on Energy and Commerce, the Committee on Ways and Means, and the Committee on Foreign Affairs of the House of Representatives, to the Committee on Commerce, Science, and Transportation of the Senate, and to the Joint Economic Committee of the Congress, a report—

- (1) analyzing the report of the Secretary of Commerce;
- (2) making recommendations for changes in the analysis done in the report due the following year under section 3;
- (3) making recommendations for improving the collection by respective Federal agencies of data on foreign direct investment in the United States, including use of private sector data, and improving survey questionnaires to obtain useful and consistent information that avoids unnecessary redundancy among Federal agencies;
- (4) reviewing the status and processes for reconciliation of data exchanged as required by this Act and the amendments made by this Act, and making any recommendations for improving and augmenting international financial data;
- (5) making recommendations for possible additional policy coordination within the executive branch affecting foreign direct investment in the United States; and
- (6) making recommendations for improvement of the coverage, industry classification, and consistency among Federal agencies of their respective surveys.

Reports under this subsection shall be issued only with respect to the first 3 reports issued by the Secretary of Commerce under section 3.

(c) OTHER REVIEWS AND REPORTS.—(1) The Comptroller General may, to the extent permitted by law, including section 5(c) of the International Investment and Trade in Services Survey Act (22 U.S.C. 3104(c)) and section 8 of this Act, also review data and information at the Bureau of the Census, the Bureau of Labor Statistics, and the Bureau of Economic Analysis and from time to time report to the Committee on Energy and Commerce, the Committee on Ways and Means, and the Committee on Foreign Affairs of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and to the Joint Economic Committee of the Congress.

(2) The Comptroller General shall, in carrying out paragraph (1), comply with procedures relating to access to and disclosure of data and information established within the Federal statistical agencies referred to in paragraph (1), and maintain any and all individually identifiable data and information at the statistical agency where the information is reviewed.

(d) CONFIDENTIALITY; REVIEW BY OTHER AGENCIES.—In preparing any report under this section, the Comptroller General shall not—

(1) disclose any confidential business information or present any information in a way in which any person, including a business enterprise or establishment, can be identified; or

(2) combine, match, or use in any other way individually identifiable data or information maintained by any of the Federal statistical agencies referred to in subsection (c) with any other individually identifiable confidential data or information that is not collected by such statistical agencies.

Before issuing any such report, the Comptroller General shall in each instance submit the report to the head or heads of the agency or agencies from which confidential or identifiable information described in the preceding sentence was obtained. The agency or agencies concerned shall promptly review the report for the purpose of assuring that the confidentiality of such information and identity is maintained, and for any other purpose, and shall provide the Comptroller General with appropriate comments or other suggestions within 10 working days after receiving the report.

(e) RIGHT OF ACCESS.—The access by the Comptroller General to information under this Act shall be in conformity with section 716 of title 31, United States Code.

SEC. 5. ACCESS TO CENSUS DATA BY BUREAU OF ECONOMIC ANALYSIS.

(a) ACCESS TO DATA.—Title 13, United States Code, is amended by adding at the end the following:

“CHAPTER 10—EXCHANGE OF CENSUS INFORMATION

“Sec.

“401. Exchange of census information with Bureau of Economic Analysis.

“§ 401. Exchange of census information with Bureau of Economic Analysis.

“(a) EXCHANGE OF INFORMATION.—The Bureau of the Census shall exchange with the Bureau of Economic Analysis of the Department of Commerce information collected under this title, and under the International Investment and Trade in Services Survey Act, that pertains to any business enterprise that is operating in the United

States, if the Secretary of Commerce determines such information is appropriate to augment and improve the quality of data collected under the International Investment and Trade in Services Survey Act. Information provided to the Bureau of Economic Analysis by the Bureau of the Census shall be only those data collected directly from respondents by the Bureau of the Census.

“(b) REQUESTS FOR INFORMATION.—The Director of the Bureau requesting information under this section shall make the request in writing and shall certify that the information will be used only for statistical activities performed to improve the quality of data collected under the authority of title 13, United States Code, and the International Investment and Trade in Services Survey Act.

“(c) DEFINITION.—As used in subsection (a), the terms ‘business enterprise’ and ‘United States’ have the meanings given those terms in section 3 of the International Investment and Trade in Services Survey Act.”.

(b) CONFORMING AMENDMENTS.—(1) The table of chapters at the beginning of title 13, United States Code, is amended by adding at the end the following:

“10. Exchange of census information 401”.

(2) Section 9(a) of title 13, United States Code, is amended by inserting after “section 8” the following: “or chapter 10”.

SEC. 6. AMENDMENTS TO THE INTERNATIONAL INVESTMENT AND TRADE IN SERVICES SURVEY ACT.

(A) PURPOSE.—Section 2(b) of the International Investment and Trade in Services Survey Act (22 U.S.C. 3101(b)) is amended by inserting after “the impact of such investment and trade,” in the first sentence the following: “to authorize the collection and use of information on direct investments owned or controlled directly or indirectly by foreign governments or persons,”.

(b) REPORTING REQUIREMENT.—Section 4(a)(5) of the International Investment and Trade in Services Survey Act (22 U.S.C. 3103(a)(5)) is amended by inserting before the period the following: “, including, with respect to foreign direct investment in the United States, information on ownership by foreign governments of United States affiliates by country, and tables, on an aggregated basis, of business enterprises the ownership or control of which by foreign persons is more than 50 percent of the voting securities or other evidences of ownership of such enterprises, and business enterprises the ownership or control of which by foreign persons is 50 percent or less of the voting securities or other evidences of ownership of such enterprises”.

(c) BUREAU OF ECONOMIC ANALYSIS REPORT.—Section 4 of the International Investment and Trade in Services Survey Act (22 U.S.C. 3103) is amended by adding at the end the following new subsection:

“(h)(1) The President, or the designee of the President responsible for monitoring the impact of foreign investment in the United States, coordinating implementation of United States policy on investment, and investigating foreign acquisitions under section 721 of the Defense Production Act of 1950 (50 App. U.S.C. 2170), may request a report from the Bureau of Economic Analysis of the Department of Commerce. When such request is made in connection with an investigation under such section 721, the report shall be provided within 14 days after the request is made. When such

request is not made in connection with an investigation under such section 721, the report shall be provided within 60 days after the request.

“(2) A report requested under paragraph (1) shall contain the best available information on the extent of foreign direct investment in a given industry, including a breakdown of total investment in the industry, and any foreign government investment in the industry, by country of the foreign owner, and any other information that the Bureau of Economic Analysis or such designee of the President considers relevant. The industry information provided shall be at the most detailed level available of Standard Industrial Classification, subject to the requirements of section 5.”.

(d) ACCESS TO INFORMATION.—Section 5 of the International Investment and Trade in Services Survey Act (22 U.S.C. 3104) is amended—

(1) by redesignating subsection (d) as subsection (e); and

(2) by inserting after subsection (c) the following:

“(d) The Bureau of the Census of the Department of Commerce is authorized, for purposes of augmenting and improving the quality of data collected by the Bureau of the Census, to have, upon written request, access to data relating to business enterprises that is collected directly by the Bureau of Economic Analysis for purposes of this Act. The Bureau of Labor Statistics of the Department of Labor is authorized, for purposes of augmenting and improving the data collected by the Bureau of Labor Statistics, to have access, upon written request, to selected identification information on business enterprises and data on international services transactions, that is collected directly by the Bureau of Economic Analysis for purposes of this Act. Officers and employees of the Bureau of the Census and the Bureau of Labor Statistics shall, for purposes of subsection (c), be deemed to be officials or employees designated to perform functions under this Act.”.

(e) CONFORMING AMENDMENTS.—Section 5 of the International Investment and Trade in Services Survey Act is amended—

(1) in subsection (c)(2) by striking “(d)” and inserting “(e)”; and

(2) in subsection (e), as redesignated by subsection (d)(1) of this section, by inserting “or (d)” after “(c)”.

SEC. 7. ACCOUNTABILITY FOR TIMELY REPORTING.

(a) AFFIRMATION BY A RESPONSIBLE OFFICER.—Section 5(b) of the International Investment and Trade in Services Survey Act (22 U.S.C. 3104(b)) is amended by adding at the end the following: “When a report under paragraph (2) is furnished under oath, such oath shall be by the officer of such person who is directly responsible for the maintenance and compilation of such information, and shall certify that the report was prepared in accordance with this Act, is complete, and is to such officer’s best knowledge and belief, substantially accurate, except in a case in which, in accordance with rules and regulations issued under this Act, estimates have been provided because data are not available from customary accounting records or precise data could not be obtained without undue burden, and the data subject to such estimates has been noted in the report.”.

(b) CIVIL PENALTIES.—Section 6(a) of the International Investment and Trade in Services Survey Act (22 U.S.C. 3105(a)) is amended by striking “may be subject to a civil penalty not exceeding \$10,000” and inserting “shall be subject to a civil penalty of not less than \$2,500, and not more than \$25,000,”.

22 USC 3144.

SEC. 8. ACCESS TO INFORMATION; CONFIDENTIALITY.

(a) CONFIDENTIALITY.—(1) Those officers and employees who have access to information under this Act to which the provisions of section 9 of title 13, United States Code, apply must have been sworn, as provided for in section 23(c) of such title, to observe the limitations imposed by section 9(a) of such title and to be subject to the provisions of section 214 of such title to the same extent as such section applies to officers or employees of the Bureau of the Census.

(2) Only those officers and employees who have sworn to observe the provisions of section 5(c) of the International Investment and Trade in Services Survey Act (22 U.S.C. 3104(c)) may have access under this Act to information to which such provisions apply, and such officers and employees are subject to the penalties for improper disclosure of such information provided in section 5(e) of that Act to the same extent as such section applies to officers or employees designated to perform functions under that Act.

(3) Those officers and employees referred to in paragraphs (1) and (2) of this section shall be subject to any other restriction or penalty imposed by law with respect to disclosure of information to which such officers or employees have access under this Act.

(b) VIOLATIONS AND PENALTIES.—Whoever is in possession of information made available to any department or agency by virtue of this Act or the amendments made by this Act and discloses the information in any form which can be associated with, or otherwise identify, any person, including any business enterprise or establishment, shall be fined not less than \$2,500 nor more than \$25,000 or imprisoned not more than 5 years, or both.

(c) UNLAWFUL ACCESS.—Whoever procures, by fraud, misrepresentation, or other unlawful act, access to information made available to any department or agency by virtue of this Act or the amendments made by this Act shall be fined not less than \$2,500 nor more than \$25,000 or imprisoned not more than 5 years, or both.

(d) INFORMATION IMMUNE FROM PROCESS.—Information obtained under this Act shall be immune from legal process and shall not be used as evidence or for any purpose in any Federal, State, or local government action, suit, or other administrative or judicial proceeding except as necessary to enforce requirements imposed by law on the collection of information, to enforce the provisions of subsections (b) and (c).

(e) IMPLEMENTATION.—(1) The Secretary of Commerce shall be responsible for the implementation of the exchange of information under this Act between the Bureau of the Census and the Bureau of Economic Analysis, and shall resolve any questions on access to information, data, or methodology that may arise between the Bureau of the Census and the Bureau of Economic Analysis, except that the Secretary shall not construe this section in a manner which would prevent the augmentation and improvement of the quality of international data collected under the International Investment and Trade in Services Survey Act. The Bureau of Economic Analysis and the Bureau of the Census shall agree in writing to the data to be shared under this Act.

(2) The Director of the Office of Management and Budget shall be responsible for the implementation of the exchange of information under this Act between the Bureau of Economic Analysis and the Bureau of Labor Statistics, and shall resolve any questions on access to information, data, or methodology that may arise between the

Bureau of Economic Analysis and the Bureau of Labor Statistics, except that the Director shall not construe this section in a manner which would prevent the augmentation and improvement of the quality of international data collected under the International Investment and Trade in Services Survey Act.

SEC. 9. CONSTRUCTION OF THE ACT.

22 USC 3145.

(a) IN GENERAL.—Nothing in this Act or the amendments made by this Act shall be construed to require any business enterprise or any of its officers, directors, shareholders, or employees, or any other person, to provide information beyond that which is required before the enactment of this Act.

(b) IMPLEMENTATION.—All departments and agencies implementing this Act and the amendments made by this Act shall, with respect to surveys or questionnaires used in such implementation—

(1) eliminate questions that are no longer necessary,

(2) cooperate with one another in order to ensure that questions asked are consistent among the departments and agencies, and

(3) develop new questions in order to obtain more refined statistics and analyses,

consistent with the purposes of the provisions of law amended by this Act and the Paperwork Reduction Act of 1980.

SEC. 10. DEFINITIONS.

22 USC 3146.

For purposes of this Act—

(1) the terms “foreign”, “direct investment”, “international investment”, “United States”, “business enterprise”, “foreign person”, and “United States person” have the meanings given those terms in section 3 of the International Investment and Trade in Services Survey Act (22 U.S.C. 3102); and

(2) the term “foreign direct investment in the United States” means direct investment by foreign persons in any business enterprise that is a United States person.

Approved November 7, 1990.

LEGISLATIVE HISTORY—S 2516 (H.R. 4520):

HOUSE REPORTS: No. 101-855, Pt. 1 (Comm. on Foreign Affairs) and Pt. 2 (Comm. on Energy and Commerce), both accompanying H.R. 4520.

SENATE REPORTS: No. 101-443 (Comm. on Commerce, Science, and Transportation).

CONGRESSIONAL RECORD, Vol. 136 (1990):

Oct. 18, considered and passed Senate.

Oct. 23, considered and passed House.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 26 (1990):

Nov. 7, Presidential statement.



APPENDIX C

Statistics

The following tables provide additional details on foreign direct investment in the United States. They are numbered according to the report chapters to which they primarily relate.

Table 2-1
Annual Change In U.S. Gross Saving and Gross
Private Domestic Investment

	<u>Gross Savings</u>	<u>Gross Private Domestic Investment</u>
1975	-3.7%	-8.8%
1976	18.6%	26.5%
1977	18.5%	23.9%
1978	21.8%	21.1%
1979	12.2%	9.1%
1980	-2.9%	-3.9%
1981	17.3%	18.0%
1982	14.5%	-13.2%
1983	3.9%	12.3%
1984	22.6%	32.4%
1985	-6.2%	-3.3%
1986	-1.5%	2.5%
1987	5.7%	6.1%
1988	18.1%	6.8%
1989	5.4%	3.1%
1990	-4.9%	-3.4%

Source: Bureau of Economic Analysis

Table 2-2
Foreign Direct Investment In The United States
(Billions of Dollars)

	<u>Position</u>	<u>Capital Flows</u>
1970	13.3	1.5
1971	13.9	0.4
1972	14.9	0.9
1973	20.6	2.8
1974 ^a	25.1	4.8
1975	27.7	2.6
1976	30.8	4.3
1977	34.6	3.7
1978	42.5	7.9
1979	54.5	11.9
1980 ^a	83.0	16.9
1981	108.7	25.2
1982	124.7	13.8
1983	137.1	11.9
1984	164.6	25.4
1985	184.6	19.0
1986	220.4	34.1
1987 ^a	263.4	58.1
1988	314.8	59.4
1989	373.8	70.6
1990	403.7	37.2

a: Break in series due to benchmark surveys.

Source: Bureau of Economic Analysis Source:

Table 2-3
Flows of Foreign Capital Into
The U.S. at Book Value
(Millions of dollars)

	<u>Total</u> ^a	<u>Official</u>	<u>Direct Investment</u>	<u>All Other (portfolio)</u>
1983	84,869	5,845	11,946	67,077
1984	102,621	3,140	25,359	74,122
1985	130,012	-1,083	19,022	112,074
1986	221,599	35,588	34,091	151,420
1987	229,828	45,343	58,119	126,366
1988	221,534	39,657	59,424	122,453
1989	216,549	8,624	70,551	137,374
1990	86,303	32,425	37,213	16,666

a: Does not include "statistical discrepancy"

Source: Bureau of Economic Analysis

Table 2-4
Foreign Direct Investment Position In the
United States, Total and Selected Countries
(Millions of dollars)

	<u>Direct Investment Position</u>				
	<u>Total</u>	<u>United Kingdom</u>	<u>Japan</u>	<u>Nether-lands</u>	<u>Canada</u>
1980 ^a	83,046	14,015	4,723	19,140	12,162
1981	108,714	18,585	7,697	26,824	12,116
1982	124,667	28,447	9,677	26,191	11,708
1983	137,061	32,152	11,336	29,162	11,434
1984	164,583	38,387	16,044	33,728	15,286
1985	184,615	43,555	19,313	37,056	17,131
1986	220,414	55,935	26,824	40,717	20,318
1987 ^a	263,394	75,519	34,421	46,636	24,684
1988	314,754	95,698	51,126	48,128	26,566
1989	373,763	105,511	67,319	56,316	28,686
1990	403,735	108,055	83,498	64,333	27,733

	<u>Change in Direct Investment Position</u>				
	<u>Total</u>	<u>United Kingdom</u>	<u>Japan</u>	<u>Nether-lands</u>	<u>Canada</u>
1980	28,584	4,219	1,230	6,468	5,008
1981	25,688	4,570	2,974	7,684	-46
1982	15,953	9,862	1,980	-633	-408
1983	12,394	3,705	1,659	2,991	-274
1984	27,522	6,235	4,708	4,546	3,852
1985	20,032	5,168	3,269	3,328	1,845
1986	35,799	12,380	7,511	3,661	3,187
1987	42,980	19,584	7,597	5,919	4,366
1988	51,360	20,179	16,705	1,492	1,882
1989	59,009	9,813	16,193	8,188	2,120
1990	29,972	2,544	16,179	8,017	-953

a: Break in series due to rebenchmarking

Source: Bureau of Economic Analysis

TABLE 4-1

WORLD STOCK OF INWARD DIRECT INVESTMENT IN MAJOR HOST COUNTRIES OR REGIONS,
SELECTED YEARS, 1967-89
(Billions of Dollars or Percentage)

	Amount				Percentage Distribution				Average Annual Rate of Growth		
	1967	1973	1980	1989	1967	1973	1980	1989	1967-73	1973-80	1980-89
All Countries	105.5	208.1	504.5	1,402.9	100.0	100.0	100.0	100.0	12.0%	13.5%	12.0%
Developed Countries	73.2	153.7	393.4	1,133.3	69.4	73.9	78.0	80.8	13.2	14.4	12.5
United States	9.9	20.6	83.0	400.8	9.4	9.9	16.5	28.6	13.0	22.0	19.1
Europe	31.4	79.9	212.3	539.9	29.8	38.4	42.1	38.5	16.8	15.0	10.9
EC	24.8	68.0	186.9	483.9	23.5	32.7	37.0	34.5	18.3	15.5	11.1
Belgium-Luxembourg a) b)	1.4	3.8	7.5	21.9	1.3	1.8	1.5	1.6	18.1	10.2	12.6
Denmark b)	0.7	1.9	4.2	5.2	0.7	0.9	0.8	0.4	18.1	12.0	2.4
France b)	3.0	6.5	21.1	59.0	2.8	3.1	4.2	4.2	13.8	18.3	12.1
Germany c)	3.6	13.1	47.9	101.5	3.4	6.3	9.5	7.2	24.0	20.3	8.7
Greece b)	0.1	0.4	3.0	8.1	0.1	0.2	0.6	0.6	26.0	33.4	11.7
Ireland b)	0.1	0.3	1.9	2.8	0.1	0.1	0.4	0.2	20.1	30.2	4.4
Italy b)	2.6	7.8	8.9	50.9	2.5	3.7	1.8	3.6	20.1	1.9	21.4
Netherlands b)	4.9	7.6	19.2	47.9	4.6	3.7	3.8	3.4	7.6	14.2	10.7
Portugal	0.1	0.4	1.1	5.7	0.1	0.2	0.2	0.4	26.0	15.5	20.1
Spain b)	0.4	2.1	9.1	42.1	0.4	1.0	1.8	3.0	31.8	23.3	18.6
United Kingdom d)	7.9	24.1	63.0	138.8	7.5	11.6	12.5	9.9	20.4	14.7	9.2
Other Europe	6.6	12.0	25.4	56.0	6.3	5.8	5.0	4.0	10.5	11.3	9.2
Sweden	0.5	1.0	1.7	5.4	0.5	0.5	0.3	0.4	12.2	7.9	13.7
Switzerland e)	2.1	4.3	14.3	31.7	2.0	2.1	2.8	2.3	12.7	18.7	9.2
Other Europe b)	4.0	6.7	9.4	18.9	3.8	3.2	1.9	1.3	9.0	5.0	8.1
Canada f)	19.2	33.0	51.6	103.0	18.2	15.9	10.2	7.3	9.4	6.6	8.0
Australia and New Zealand	4.9	10.5	28.1	69.3	4.6	5.0	5.6	4.9	13.5	15.1	10.5
South Africa	7.2	8.1	15.1	11.1	6.8	3.9	3.0	0.8	2.0	9.3	-3.4
Japan b) g)	0.6	1.6	3.3	9.2	0.6	0.8	0.7	0.7	17.8	10.9	12.1
Developing Countries b)	32.3	54.4	111.1	269.6	30.6	26.1	22.0	19.2	9.1	10.7	10.4
Western Hemisphere	18.5	28.9	62.2	103.9	17.5	13.9	12.3	7.4	7.7	11.6	5.9
Africa	5.6	10.2	13.1	29.8	5.3	4.9	2.6	2.1	10.5	3.6	9.6
Asia	8.3	15.3	35.8	135.9	7.9	7.4	7.1	9.7	10.7	12.9	16.0
Middle East h)	3.2	4.3	4.3	12.1	3.0	2.1	0.9	0.9	5.0	0.0	12.2
Other Asia	5.1	11.0	31.5	123.8	4.8	5.3	6.2	8.8	13.7	16.2	16.4
Addenda:											
Outward Stock	112.3	211.1	518.5	1,342.3							
Inward Stock	105.5	208.1	503.6	1,402.9							
Difference i)	6.8	3	14.9	-60.6							
OPEC Countries j)	8.2	13.8	10.8	21.7	7.8	6.6	2.1	1.5	9.1	-3.4	8.1

TABLE 1, Continued

- a) Stock data available for Belgium only.
- b) Among developed countries, Belgium, Denmark, France, Greece, Luxembourg, Spain, several other European countries not shown separately, and Japan do not collect complete reinvested earnings data. The Netherlands does not collect reinvested earnings data for the banking industry. Also, a number of developing countries do not collect reinvested earnings data. If reinvested earnings were included, the stocks for those countries would be higher.
- c) Beginning with 1976 and for subsequent years, data used are "statistics on levels" for both primary and secondary investment as compiled and published by the Deutsche Bundesbank. Data for years prior to 1976 are commonly referred to as "special statistics" published by the Ministry of Economics.
- d) Data include banking beginning with 1976. Prior to 1979, investment in insurance companies is for the United States only. Beginning with 1979, data include investment by oil companies, insurance companies, and investment in real estate.
- e) Data back to 1960 were revised in 1979 by the Union Bank of Switzerland to more accurately reflect its estimates (based on sample data) of Swiss direct investment abroad.
- f) Data series revised beginning with 1983 data to include non-resident equity in Canadian assets abroad, and now represents foreign investment in Canadian enterprises, not just in Canada.
- g) Beginning with 1976 and for subsequent years, data used are direct investment external assets (which exclude reinvested earnings) as compiled and published by the Bank of Japan. Data for years prior to 1976 are "approvals basis data" from the Ministry of Finance.
- h) Data for inward direct investment flows to Saudi Arabia as published by the IMF for the years 1979-84 were not used in this table to estimate the stock of inward direct investment in OPEC countries in 1980 or 1989. Instead, estimates for these flows were based on data for outward direct investment flows to Saudi Arabia from major source countries, as compiled from major source country data. Inward direct investment flows to Saudi Arabia were estimated at \$2,147 million in 1979; -\$3,228 million in 1980; -\$374 million in 1981; -\$1 million in 1982; \$952 million in 1983; \$358 million in 1984; \$216 million in 1987; -\$312 million in 1988; and -\$45 million in 1989. Also, an IMF estimate for unspecified Middle Eastern countries in 1979 of -\$4,102 million (debit) is excluded from our estimates.
- i) This table is intended to show only regional and country patterns of inward direct investment. Because of differences in data collection systems and methodologies for inward compared with outward direct investment (both within some individual countries as well as between countries), and possible statistical error, the world stock of inward direct investment is not equal to the world stock of direct investment abroad.
- j) OPEC countries are Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela.

Source: U.S. Department of Commerce, International Trade Administration, Office of Trade and Investment Analysis, from national governments and international organizations.

TABLE 4-2

WORLD STOCK OF INWARD DIRECT INVESTMENT IN MAJOR HOST COUNTRIES OR REGIONS,
SELECTED YEARS, 1967-89
(Billions of SDRs or Percentage)

	Amount				Percentage Distribution				Average Annual Rate of Growth		
	1967	1973	1980	1989	1967	1973	1980	1989	1967-73	1973-80	1980-89
ALL Countries	105.5	172.5	395.6	1,067.6	100.0	100.0	100.0	100.0	8.5%	12.6%	11.7%
Developed Countries	73.2	127.4	308.5	862.4	69.4	73.9	78.0	80.8	9.7	13.5	12.1
United States	9.9	17.1	65.1	305.0	9.4	9.9	16.5	28.6	9.5	21.0	18.7
Europe	31.4	66.2	166.4	410.9	29.8	38.4	42.1	38.5	13.2	14.1	10.6
EC	24.8	56.4	146.5	368.2	23.5	32.7	37.0	34.5	14.7	14.6	10.8
Belgium-Luxembourg a) b)	1.4	3.2	5.9	16.7	1.3	1.9	1.5	1.6	14.8	9.1	12.3
Denmark b)	0.7	1.6	3.3	4.0	0.7	0.9	0.8	0.4	14.8	10.9	2.2
France b)	3.0	5.4	16.5	44.9	2.8	3.1	4.2	4.2	10.3	17.3	11.8
Germany c)	3.6	10.9	37.6	77.2	3.4	6.3	9.5	7.2	20.3	19.4	8.3
Greece b)	0.1	0.4	2.4	6.2	0.1	0.2	0.6	0.6	26.0	29.2	11.1
Ireland b)	0.1	0.2	1.5	2.1	0.1	0.1	0.4	0.2	12.2	33.4	3.8
Italy b)	2.6	6.5	7.0	38.7	2.5	3.8	1.8	3.6	16.5	1.1	20.9
Netherlands b)	4.9	6.3	15.1	36.4	4.6	3.7	3.8	3.4	4.3	13.3	10.3
Portugal	0.1	0.3	0.9	4.3	0.1	0.2	0.2	0.4	20.1	17.0	19.0
Spain b)	0.4	1.7	7.1	32.0	0.4	1.0	1.8	3.0	27.3	22.7	18.2
United Kingdom d)	7.9	20.0	49.4	105.6	7.5	11.6	12.5	9.9	16.7	13.8	8.8
Other Europe	6.6	9.9	19.9	42.6	6.3	5.7	5.0	4.0	7.0	10.5	8.8
Sweden	0.5	0.8	1.3	4.1	0.5	0.5	0.3	0.4	8.1	7.2	13.6
Switzerland e)	2.1	3.6	11.2	24.1	2.0	2.1	2.8	2.3	9.4	17.6	8.9
Other Europe b)	4.0	5.6	7.4	14.4	3.8	3.2	1.9	1.3	5.8	4.1	7.7
Canada f)	19.2	27.4	40.4	78.4	18.2	15.9	10.2	7.3	6.1	5.7	7.6
Australia and New Zealand	4.9	8.7	22.0	52.7	4.6	5.0	5.6	4.9	10.0	14.2	10.2
South Africa	7.2	6.7	11.8	8.4	6.8	3.9	3.0	0.8	-1.2	8.4	-3.7
Japan b) g)	0.6	1.3	2.6	7.0	0.6	0.8	0.7	0.7	13.8	10.4	11.6
Developing Countries b)	32.3	45.1	87.1	205.2	30.6	26.1	22.0	19.2	5.7	9.9	10.0
Western Hemisphere	18.5	24	48.8	79.1	17.5	13.9	12.3	7.4	4.4	10.7	5.5
Africa	5.6	8.4	10.3	22.7	5.3	4.9	2.6	2.1	7.0	3.0	9.2
Asia	8.3	12.7	28.1	103.4	7.9	7.4	7.1	9.7	7.3	12.0	15.6
Middle East h)	3.2	3.6	3.4	9.2	3.0	2.1	0.9	0.9	2.0	-0.8	11.7
Other Asia	5.1	9.1	24.7	94.2	4.8	5.3	6.2	8.8	10.1	15.3	16.0
Addenda:											
Outward Stock	112.3	175	406.5	1,021.4							
Inward Stock	105.5	172.5	394.9	1,067.6							
Difference i)	6.8	2.5	11.6	46.2							
OPEC Countries j)	8.2	11.4	8.5	16.5	7.8	6.6	2.1	1.5	5.6	-4.1	7.6

TABLE 2, Continued

- a) Stock data available for Belgium only.
- b) Among developed countries, Belgium, Denmark, France, Greece, Luxembourg, Spain, several other European countries not shown separately, and Japan do not collect complete reinvested earnings data. The Netherlands does not collect reinvested earnings data for the banking industry. Also, a number of developing countries do not collect reinvested earnings data. If reinvested earnings were included, the stocks for those countries would be higher.
- c) Beginning with 1976 and for subsequent years, data used are "statistics on levels" for both primary and secondary investment as compiled and published by the Deutsche Bundesbank. Data for years prior to 1976 are commonly referred to as "special statistics" published by the Ministry of Economics.
- d) Data include banking beginning with 1976. Prior to 1979, investment in insurance companies is for the United States only. Beginning with 1979, data include investment by oil companies, insurance companies, and investment in real estate.
- e) Data back to 1960 were revised in 1979 by the Union Bank of Switzerland to more accurately reflect its estimates (based on sample data) of Swiss direct investment abroad.
- f) Data series revised beginning with 1983 data to include non-resident equity in Canadian assets abroad, and now represents only foreign investment in Canadian enterprises, not just in Canada.
- g) Beginning with 1976 and for subsequent years, data used are direct investment external assets (which exclude reinvested earnings) as compiled and published by the Bank of Japan. Data for years prior to 1976 are "approvals basis data" from the Ministry of Finance.
- h) Data for inward direct investment flows to Saudi Arabia as published by the IMF for the years 1979-84 were not used in this table to estimate the stock of inward direct investment in OPEC countries in 1980 or 1989. Instead, estimates for these flows were based on data for outward direct investment flows to Saudi Arabia from major source countries, as compiled from major source country data. Inward direct investment flows to Saudi Arabia were estimated at \$2,147 million in 1979; -\$3,228 million in 1980; -\$374 million in 1981; -\$1 million in 1982; \$952 million in 1983; \$358 million in 1984; \$216 million in 1987; -\$312 million in 1988; and -\$45 million in 1989. Also, an IMF estimate for unspecified Middle Eastern countries in 1979 of -\$4,102 million (debit) is excluded from our estimates.
- i) This table is intended to show only regional and country patterns of inward direct investment. Because of differences in data collection systems and methodologies for inward compared with outward direct investment (both within some individual countries as well as between countries), and possible statistical error, the world stock of inward direct investment is not equal to the world stock of direct investment abroad.
- j) OPEC countries are Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela.

Source: U.S. Department of Commerce, International Trade Administration, Office of Trade and Investment Analysis, from national governments and international organizations.

Table 5-1
Investment Outlays By Foreign Direct Investors
To Acquire or Establish U.S. Business Enterprises
(\$ Millions or Percent)

<u>Year</u>	<u>Acqui- sitions \$Mil</u>	<u>Estab- lishments \$Mil</u>	<u>Total \$Mil</u>	<u>Acquisitions as percent of Total</u>	<u>Total Outlays as percent of GNP</u>
1979	13159	2158	15317	85.9	0.61
1980	8974	3198	12172	73.7	0.45
1981	18151	5067	23219	78.2	0.76
1982	6563	4254	10817	60.7	0.34
1983	4848	3244	8091	59.9	0.24
1984	11836	3361	15197	77.9	0.40
1985	20083	3023	23106	86.9	0.58
1986	31450	7728	39177	80.3	0.93
1987	33933	6377	40310	84.2	0.89
1988	64855	7837	72692	89.2	1.49
1989	55822	8743	64565	86.5	1.24

Note: Includes outlays for U.S. banks.

Note: Covers enterprises that, in the year they were acquired or established, had total assets of over \$1 million or owned at least 200 acres of U.S. land.

Note: The figures for 1989 are preliminary and will be revised up to include late reports.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (May 1990), p. 23, and comparable articles in earlier issues. Also, Survey of Current Business (July 1990), p. 40, and comparable tables for earlier years containing GNP data.

Table 5-2
Comparison of Average Gross Product Per Employee
of Manufacturing Affiliates with that of All
U.S. Manufacturing

	<u>1980</u>	<u>1987</u>	<u>% Change</u>
Manufacturing Affiliates *:			
Gross Product (\$Bil Nominal)	31.0	73.8	138.2
Employment (Thous)	1105.0	1542.6	39.6
Deflator (1982=1.00) **	0.876	1.067	21.8
Gross Product (\$82 Bil) **	35.4	69.2	95.6
Gross Product (\$82 Thous)/Employee **	32.0	44.8	40.1
Gross Product (\$82 Thous)/Employee ***	32.4	46.0	42.3
Gross Product (\$ Thous Nominal)/Employee	28.0	47.8	70.6
All Manufacturing *:			
Gross Product (\$Bil Nominal)	564.2	838.8	48.7
Employment (Thous)	20220.0	18959.0	-6.2
Deflator (1982=1.00) ***	0.867	1.039	19.9
Gross Product (\$Bil 1982) ***	651.0	807.1	24.0
Gross Product (\$82 Thous)/Employee ***	32.2	42.6	32.2
Gross Product (\$ Thous Nominal)/Employee	27.9	44.2	58.6

* Excludes petroleum and coal products.

* Reflects a deflator developed from BEA industry price deflators for gross product and sales data for affiliates by industry of sales at the 2-digit level of aggregation. This new deflator was then applied to the manufacturing affiliate gross product data.

*** Reflects deflators for all U.S. manufacturing, except petroleum and coal products.

Note: The affiliate gross product and employment data are on an industry of affiliate basis, while the all manufacturing data are on an establishment basis.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 5-3
Selected Comparisons of
U.S. Affiliates of Foreign Companies with
Parents of U.S. Multinational Companies in 1988
(Dollars or Percent)

	<u>All Nonbank Businesses</u>		<u>U.S. Manufacturing</u>
	<u>U.S. Affiliates</u> <u>of Foreign</u> <u>Companies</u>	<u>Parents of U.S.</u> <u>Multinational</u> <u>Companies</u>	<u>Affiliates</u> <u>of Foreign</u> <u>Companies</u>
Average Compensation per Employee	30517	33154	33726
Gross Product per Employee *	47117	54229	54401
U.S. Intrafirm Exports per Employee	6637	4491	3180
U.S. Intrafirm Imports per Employee	31045	3777	11495
Vertical Integration (Ratio of Gross Product to Sales) *	21	37	33
Ratio of Imports to Total Purchases of Inputs *	24	8	16
Ratio of Local Inputs to Sales *	81	95	91

* Data for 1987.

Source: Economic Report of the President (February 1991), p. 260; Survey of Current Business, (various issues); and Foreign Direct Investment in the United States (various issues).

Table 5-4
Gross Product of U.S. Affiliates and All U.S. Businesses

Industry	Affiliate Shares of Gross Product of All U.S. Businesses (Percent)		
	1977	1981	1987
Manufacturing	5.0	10.3	10.5
Wholesale Trade	3.8	5.0	6.8
Retail Trade	1.2	2.3	2.5
Finance, except Banking	2.2	4.2	9.4
Insurance	2.4	4.0	5.2
Real Estate	0.6	2.2	2.3
Services	0.5	0.7	0.9
Other Industries	0.5	1.0	1.0
All Industries	2.3	4.2	4.3

	Gross Product in 1987			
	Affiliates		All U.S. Business	
	\$ Bil	% of Total	\$ Bil	% of Total
Manufacturing	88.8	58.5	849.6	24.0
Wholesale Trade	21.0	13.8	311.3	8.8
Retail Trade	10.5	6.9	422.4	11.9
Finance, except Banking	6.5	4.3	69.2	2.0
Insurance	5.3	3.5	100.3	2.8
Real Estate	4.6	3.0	194.8	5.5
Services	6.7	4.4	778.0	22.0
Other Industries	8.5	5.6	817.3	23.1
All Industries	151.9	100.0	3542.8	100.0

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (June 1990), P. 50.

Table 5-5
Gross Product of Nonbank U.S. Affiliates of Foreign Countries
By Country of Ultimate Beneficial Owner
(\$ Millions)

	<u>1977</u>	<u>1980</u>	<u>1986</u>	<u>1987</u>	<u>% Change 1977-87</u>
Canada	5991	10933	27714	28275	372
Europe	24231	50401	85795	91115	276
United Kingdom	7687	17278	29193	31956	316
Germany	2938	8765	13421	15144	415
Netherlands	6390	11330	15170	15675	145
France	3153	6158	8299	8246	162
Switzerland	2005	3791	8055	8510	324
Latin America and	1349	2296	3880	4698	248
Other Western Hemisphere					
Japan	2488	4961	13717	16828	576
All Countries	35222	70906	142120	151905	331

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (June 1990), P. 47.

Note: Totals include some countries for which separate data are not shown.

Table 5-6
Average Expenditures For New Plant and Equipment Per
Employee By Nonbank U.S. Affiliates of Foreign Companies, By
Country of Ultimate Beneficial Owner
(Thousands of 1982 Dollars)

	<u>1977</u>	<u>1980</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Canada	7.3	15.5	8.3	9.1	8.9
Europe	10.1	8.2	7.3	7.1	8.0
Japan	6.1	12.5	15.5	16.9	14.6
All Countries	9.1	9.6	8.4	8.6	9.0

Note: The GNP fixed-weighted price index was used to deflate the affiliate plant and equipment expenditure data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States (various issues) and Economic Report of the President (February 1991), p. 292.

Table 5-7
Expenditures For Research and Development By
Manufacturing U.S. Affiliates of Foreign Companies
By Industry of Affiliate
(\$ Millions or Percent)

	<u>1977</u>	<u>1980</u>	<u>1981</u>	<u>1986</u>	<u>1987</u>
	(\$ Millions)				
Food Products	7	19	32	54	58
Chemicals	483	834	1580	2782	3220
Metals	37	45	71	174	158
Machinery	167	507	670	1652	1581
Other	50	200	293	349	556
All Manufacturing	743	1605	2645	5011	5573

(As Percent of Gross Product)

Food Products	0.27	0.49	0.66	0.85	0.93
Chemicals	8.99	10.12	8.48	12.33	12.53
Metals	1.84	1.23	1.78	2.35	2.20
Machinery	5.23	6.82	7.36	13.83	12.78
Other	1.43	2.58	2.78	1.99	2.49
All Manufacturing	4.46	5.18	5.61	7.62	7.55

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States (various years) and Survey of Current Business (June 1990), p. 46.

Table 5-8
Average Expenditures for Research and Development Per Employee
By Nonbank U.S. Affiliates of Foreign Companies, By Selected
Country of Ultimate Beneficial Owner and Industry of Affiliate
(Thousands of 1982 Dollars)

	<u>1977</u>	<u>1980</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
All Industries:					
Canada	0.57	0.54	2.20	2.36	*
Europe	1.35	1.21	1.68	1.68	1.62
Japan	0.44	0.89	1.15	0.85	1.04
All Countries	1.12	1.11	1.72	1.70	1.62
Manufacturing:					
Food Products	0.14	0.18	0.29	0.34	0.50
Chemicals	3.58	3.41	6.43	6.84	7.75
Metals	0.63	0.46	0.96	0.83	0.91
Machinery	1.52	2.03	4.57	4.08	3.53
Other Manufacturing	0.43	0.78	0.76	0.90	0.84
All Manufacturing	1.58	1.69	3.09	3.04	2.93

* Suppressed to avoid disclosure of data for an individual company.

n.a. Not available.

Note: The GNP fixed-weighted price index was used to deflate the affiliate research and development expenditure data. The manufacturing industry data exclude petroleum and coal products. The expenditures exclude spending for R&D conducted for others under contract.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States (various issues) and Economic Report of the President (February 1991), p. 292.

Table 5-9
Employment and Gross Product of
Nonbank U.S. Affiliates
of Foreign Companies, Amounts and as a Share of
Totals For Nonbank U.S. Businesses

<u>Year</u>	<u>Employment</u>		<u>Gross Product</u>	
	<u>Thous.</u>	<u>% of Total</u>	<u>\$ Bil.</u>	<u>% of Total</u>
1977	1218.7	1.8	35.2	2.3
1978	1429.9	2.0	42.9	2.4
1979	1753.2	2.3	55.4	2.8
1980	2033.9	2.7	70.9	3.3
1981	2416.6	3.2	98.8	4.2
1982	2448.1	3.3	103.5	4.2
1983	2546.5	3.4	111.5	4.3
1984	2714.3	3.4	128.8	4.4
1985	2862.2	3.5	134.8	4.3
1986	2937.9	3.5	142.1	4.3
1987	3224.3	3.7	151.9	4.3
1988	3682.2	4.1	n.a.	n.a.

Note: Data are not available for 1978-80 on the affiliates' share of gross domestic product for all nonbank U.S. businesses. However, based on estimates, it appears that the affiliate percentage rose each year from 1977 to 1981.

n.a. Not available.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, (June 1990), pp. 46 and 50; and (July 1990), p. 131. Also, comparable articles for earlier years and certain unpublished data.

Table 5-10
Employment By Nonbank U.S.
Affiliates of Foreign Countries
By Country of Ultimate Beneficial Owner
(Total and Percent)

	<u>1977</u>	<u>1980</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Total, Thousands	1218.7	2033.9	2937.9	3224.3	3682.2
Percent of Total:					
Canada	15.5	14.3	20.7	18.4	19.4
Europe	70.2	72.6	60.7	60.2	59.6
United Kingdom	23.5	21.1	21.2	20.1	20.0
Germany	11.0	18.5	10.6	11.4	10.2
Netherlands	12.5	9.2	8.3	8.4	8.2
France	10.7	10.1	6.1	5.8	6.7
Switzerland	6.6	7.8	6.2	5.9	5.5
Latin America and	6.9	6.3	4.4	4.6	3.1
Other Western Hemisphere					
Japan	6.3	5.7	7.5	9.4	10.9

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, Operations of U.S. Affiliates (various issues).

Note: Totals include some countries for which separate data are not shown.

Table 5-11
Employment of Affiliates By Industry of Sales,
Selected Countries of Ultimate Beneficial Owner
(1980)

	<u>United Kingdom</u>	<u>Canada</u>	<u>Japan</u>	<u>Germany</u>	<u>All Countries</u>
All Industries Total in Thousands	428.2	290.0	115.2	375.9	2033.9
Percent of Total:					
Manufacturing	52.6	50.2	41.7	48.2	51.3
Chemicals & Allied Products	8.4	1.1	2.3	13.5	8.1
Food & Kindred Products	9.0	4.6	4.2	0.7	5.0
Primary & Fabricated Metals	3.3	8.3	6.9	5.4	5.6
Electric & Electronic Equipment	5.4	9.0	12.4	4.6	8.0
Nonelectric Machinery	7.3	5.6	4.5	5.0	5.7
Motor Vehicles & Equipment	*	*	*	*	3.0
Printing & Publishing	1.1	8.9	0.6	1.2	2.1
Stone, Clay, & Glass Products	1.4	3.6	2.1	1.2	1.8
Instruments & Related Products	3.1	*	1.7	5.0	2.6
Paper & Allied Products	1.7	*	*	*	1.7
Rubber & Plastics Products	1.9	1.6	0.9	1.8	1.9
Textile Products & Apparel	3.1	1.3	2.9	1.2	1.6
Other Transportation	*	*	0.3	*	1.1
Lumber, Wood, & Furniture	0.7	0.7	*	0.9	1.0
Other Manufacturing	5.0	1.1	0.9	*	2.0
Wholesale Trade	5.0	3.9	34.7	6.1	7.0
Motor Vehicles & Equipment	0.9	*	7.8	1.7	1.2
Petroleum	*	3.5	0.3	*	4.5
Retail Trade	19.8	13.7	3.4	33.7	18.8
Insurance	6.7	2.7	*	0.8	3.1
Finance, except Banking	1.3	3.9	*	0.1	1.4
Services	4.7	4.5	9.6	1.7	5.4
Business Services	0.4	0.5	0.2	*	1.2
Real Estate	0.3	4.2	0.3	0.1	0.9
Transportation	0.3	6.4	6.2	*	*
Mining	1.5	4.7	*	*	1.7
Construction	1.7	1.6	*	4.6	2.1
Communications & Public Utilities	*	0.3	*	0.0	0.1
Agriculture, Forestry, & Fishing	*	0.2	0.3	*	*
Agriculture	0.5	0.1	0.3	0.5	0.6
Unspecified	*	0.1	1.3	2.0	1.0
General Administration Offices	4.0	2.9	4.6	3.1	3.6

* Suppressed to avoid disclosure of data of individual companies

Note: Percentages are calculated from totals excluding employment in general administration offices. The petroleum category includes petroleum and coal products manufacturing. Because of rounding, the sub-categories may not add to the totals.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, 1980 (October 1983), Table F-20.

Table 5-12
Employment of Affiliates By Industry of Sales,
Selected Countries of Ultimate Beneficial Owner
(1988)

	United Kingdom	Canada	Japan	Germany	All Countries
All Industries Total in Thousands	734.8	714.6	401.0	376.7	3682.2
Percent of Total:					
Manufacturing	47.6	33.4	43.6	52.4	45.3
Chemicals & Allied Products	7.1	8.3	2.5	18.2	7.6
Food & Kindred Products	5.6	3.5	1.4	1.0	4.5
Primary & Fabricated Metals	2.7	4.0	7.9	3.6	5.0
Electric & Electronic Equipment	5.4	3.9	7.8	7.1	6.1
Nonelectric Machinery	4.4	1.6	4.7	4.7	3.9
Motor Vehicles & Equipment	1.5	0.7	5.8	2.9	1.7
Printing & Publishing	3.6	4.7	1.7	3.1	2.8
Stone, Clay, & Glass Products	4.6	0.4	2.3	1.9	2.5
Instruments & Related Products	5.2	1.0	1.2	1.9	2.1
Paper & Allied Products	0.9	1.3	0.8	0.5	1.2
Rubber Products	0.2	0.5	4.9	2.8	1.1
Miscellaneous Plastics Products	1.2	1.5	0.5	0.8	1.0
Textile Products & Apparel	2.0	1.0	1.2	1.3	1.2
Other Transportation	0.6	0.3	*	0.5	0.4
Lumber, Wood, & Furniture	0.2	0.5	0.1	1.8	0.7
Other Manufacturing	2.5	0.2	0.7	0.3	1.1
Wholesale Trade	5.7	2.2	19.1	10.8	7.5
Motor Vehicles & Equipment	0.5	0.1	3.8	2.2	1.2
Petroleum	4.5	3.0	0.1	0.1	3.3
Retail Trade	14.3	37.0	4.7	27.4	20.4
Insurance	5.4	1.5	0.1	0.7	3.0
Finance, except Banking	1.6	0.9	13.3	0.2	2.7
Services	9.6	6.2	11.3	3.2	10.2
Business Services	5.1	0.9	3.6	0.3	4.5
Real Estate	0.4	2.1	1.2	0.1	0.8
Transportation	1.4	6.3	2.0	0.4	2.9
Mining	2.0	2.5	0.1	0.7	1.5
Construction	1.3	0.7	3.4	2.4	1.5
Communications & Public Utilities	0.2	1.0	0.0	0.0	0.4
Agriculture, Forestry, & Fishing	0.4	0.2	0.4	0.3	0.5
Unspecified	5.5	3.1	0.6	1.1	2.1

* Suppressed to avoid disclosure of data of individual companies.

Note: The petroleum category includes petroleum and coal products manufacturing. Because of rounding, the sub-categories may not add to the totals.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, Operations of U.S. Affiliates of Foreign Companies, Preliminary 1988 Estimates (August 1990), Table F-11.

Table 5-13
Employment of Nonbank U.S. Affiliates of Foreign Companies
By Region
(Thousands and Percent)

	<u>1977</u>	<u>1980</u>	<u>1987</u>	<u>1988</u>
All States, 1000	1218.7	2033.9	3224.3	3682.2
Percent of Total:				
Southeast	21.7	22.9	25.0	24.9
Midwest	24.6	22.9	23.0	22.1
Great Lakes	19.0	18.1	16.1	17.1
Far West	11.8	12.6	12.6	12.9
Southwest	6.9	8.7	9.1	8.8
New England	6.2	6.0	6.4	6.4
Plains	5.0	5.1	4.4	4.9
Rocky Mountains	1.8	1.9	1.6	1.5

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, Operations of U.S. Affiliates (various issues).

Table 5-14
Employment by Nonbank U.S. Affiliates in Individual States

	<u>Thousands of Employees</u>		<u>Percent of Employment by All Nonbank Businesses</u>	
	<u>1977</u>	<u>1988</u>	<u>1977</u>	<u>1988</u>
Delaware	6.2	40.7	3.0	14.6
Hawaii	11.4	31.0	4.0	7.8
South Carolina	35.1	82.1	3.9	6.8
New Jersey	85.0	196.0	3.6	6.3
North Carolina	45.7	153.9	2.4	6.0
Nebraska	3.5	11.5	2.0	5.8
Georgia	30.7	140.0	1.9	5.8
West Virginia	11.2	26.7	2.2	5.6
Tennessee	26.2	95.6	1.9	5.4
Alaska	5.1	7.7	4.3	5.2
Maine	5.7	23.3	1.8	5.2
New York	121.5	329.7	2.2	4.9
Illinois	73.8	206.6	1.9	4.7
Connecticut	22.6	69.9	2.0	4.7
New Hampshire	8.4	20.5	2.9	4.4
Louisiana	18.4	53.7	1.6	4.4
Texas	66.6	226.2	1.6	4.1
Ohio	55.8	166.5	1.5	4.1
Pennsylvania	64.5	177.7	1.7	4.1
Virginia	23.8	90.7	1.6	4.0
Oklahoma	8.7	35.0	1.1	3.9
Indiana	30.4	80.2	1.7	3.9
Arizona	6.9	46.3	1.0	3.8
New Mexico	2.0	15.6	0.6	3.8
Kentucky	15.5	43.6	1.6	3.8
Massachusetts	30.3	102.1	1.5	3.7
California	124.2	390.3	1.7	3.6
Wisconsin	30.6	67.7	2.0	3.6
Arkansas	9.8	25.9	1.6	3.5
Kansas	8.8	28.7	1.2	3.4
Maryland	21.5	60.1	1.8	3.4
Michigan	41.1	107.5	1.4	3.3
Florida	28.3	144.2	1.1	3.3
Vermont	4.7	6.9	3.2	3.2
Alabama	14.3	39.6	1.4	3.1
Washington	11.9	48.4	1.1	2.9
Missouri	20.2	56.1	1.3	2.9
Minnesota	17.6	49.3	1.3	2.8
Iowa	9.3	27.2	1.0	2.8
Rhode Island	3.8	11.3	1.2	2.8
Colorado	11.2	32.3	1.3	2.7
Wyoming	2.2	3.8	1.5	2.7
Mississippi	5.7	19.1	0.9	2.7
Nevada	2.3	12.7	0.9	2.6
Oregon	5.1	24.3	0.7	2.5
Utah	5.9	11.0	1.6	2.1
District of Columbia	1.4	8.2	0.4	2.0
Idaho	1.9	5.6	0.7	1.9
Montana	1.4	3.6	0.7	1.6
South Dakota	0.7	2.7	0.4	1.3
North Dakota	1.4	3.5	0.3	0.6

Note: The employment totals for all U.S. businesses used to calculate U.S. affiliate shares for Delaware and the District of Columbia for 1977 include employment by banks. Because employment by U.S. affiliates excludes banks, the share of all U.S. employment accounted for by affiliates in these jurisdictions for 1977 may be slightly understated.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, unpublished data.

Table 5-15
Gross Property, Plant, and Equipment of U.S. Nonbank Affiliates
of Foreign Companies, Data For 1987, By State

State	Total in \$ Millions	Percent consisting of		Mfg Property per Mfg Employee \$000
		Manufacturing property	Commercial property	
California	44275	25.8	40.3	90.5
Texas	41591	37.5	23.4	216.1
New York	23069	18.3	57.6	54.3
Alaska	18420	*	*	*
Louisiana	14292	46.9	9.2	424.4
Illinois	12920	48.9	28.4	96.5
New Jersey	11458	53.9	27.3	87.3
Pennsylvania	10898	55.3	18.8	68.4
Ohio	10622	62.2	18.1	92.1
North Carolina	9727	75.0	15.5	97.5
Florida	9574	22.6	53.3	70.6
Georgia	9059	49.8	34.1	80.9
Michigan	7640	51.8	12.2	76.5
Virginia	6808	49.0	29.8	109.3
South Carolina	6182	77.8	11.8	127.5
Tennessee	5604	72.8	13.9	78.6
Massachusetts	5214	30.2	47.5	48.5
Oklahoma	5088	18.5	13.3	167.7
West Virginia	5060	50.7	1.5	177.0
Kentucky	4557	50.5	14.1	109.0
Colorado	4487	15.4	43.9	72.8
Minnesota	4344	31.7	28.6	83.0
Missouri	4233	50.3	19.5	99.1
Indiana	4183	69.2	12.0	71.1
Arizona	4103	25.9	34.9	74.9
Alabama	4011	81.7	4.1	150.9
Washington	3588	42.1	32.1	113.5
Hawaii	3474	2.8	82.0	99.0
Delaware	3432	79.9	14.7	228.4
Maryland	3124	42.7	39.1	69.9
Connecticut	3092	42.8	39.3	52.5
Wyoming	2962	9.7	1.2	318.9
Wisconsin	2803	59.5	15.8	60.8
New Mexico	2751	10.3	7.6	94.0
Utah	2610	17.7	5.6	100.2
Mississippi	2425	33.4	7.9	72.3
Kansas	2350	29.7	8.7	89.4
Foreign 4	2165	7.8	1.5	563.3
Oregon	1812	35.0	32.1	72.9
Montana	1684	14.2	5.5	199.2
Iowa	1663	59.5	15.3	92.5
District of Columbia	1655	0.1	92.6	10.0
Nevada	1606	2.4	27.5	95.0
Maine	1549	49.6	19.7	108.2
North Dakota	1295	11.4	4.8	147.0
Arkansas	1289	54.2	19.6	62.4
New Hampshire	736	41.3	33.3	39.5
Rhode Island	605	57.7	20.3	52.1
Puerto Rico	558	70.4	7.7	53.8
Nebraska	459	43.4	21.6	73.7
Idaho	395	18.5	8.4	73.0
Vermont	382	52.9	11.0	126.3
South Dakota	378	*	*	*
Other U.S. areas	15019	*	1.3	*
All States	353278	36.5	25.5	98.0

* Suppressed.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, 1987 Benchmark Survey, Final Results (August 1990), p. 52 and Survey of Current Business (July 1990), p. 142.

Table 5-16
State Employment in 1988
By Nonbank U.S. Affiliates of Foreign Companies

State	Thous	Percent Distribution of Employees According to Country of Ultimate Beneficial Owner			Manufact- uring as Percent of Total
		Canada	Europe	Japan	
California	390.3	15.2	51.6	21.1	37.3
New York	329.7	17.8	59.7	11.4	24.9
Texas	226.2	15.6	63.7	6.1	34.5
Illinois	206.6	14.0	61.9	16.4	41.6
New Jersey	196.0	12.2	71.1	10.2	36.8
Pennsylvania	177.7	18.0	67.9	4.7	50.4
Ohio	166.5	17.1	59.0	12.0	49.7
North Carolina	153.9	20.3	71.0	4.4	56.7
Florida	144.2	26.6	50.2	9.2	22.3
Georgia	140.0	23.5	55.1	9.7	42.8
Michigan	107.5	17.7	58.9	15.4	53.6
Massachusetts	102.1	18.7	61.2	10.7	34.6
Tennessee	95.6	19.5	64.1	10.0	64.5
Virginia	90.7	23.8	64.3	3.9	43.4
South Carolina	82.1	11.2	74.3	6.5	49.7
Indiana	80.2	20.7	68.1	8.1	63.6
Connecticut	69.9	10.7	81.5	4.6	41.1
Wisconsin	67.7	19.6	66.2	5.8	55.5
Maryland	60.1	24.5	64.2	5.7	38.3
Missouri	56.1	28.5	59.4	4.5	42.6
Louisiana	53.7	18.2	53.4	2.2	29.4
Minnesota	49.3	22.3	65.9	5.9	47.5
Washington	48.4	27.1	45.0	16.1	33.1
Arizona	46.3	23.5	43.2	8.6	26.3
Kentucky	43.6	25.5	54.4	10.8	53.7
Delaware	40.7	*	21.9	2.5	31.9
Alabama	39.6	18.2	55.8	15.4	58.8
Oklahoma	35.0	27.1	53.4	7.7	29.1
Colorado	32.3	22.9	59.4	6.2	27.2
Hawaii	31.0	2.3	8.4	71.3	4.8
Kansas	28.7	28.2	58.5	3.8	32.4
Iowa	27.2	23.5	62.5	9.9	58.8
West Virginia	26.7	48.7	48.7	1.5	53.9
Arkansas	25.9	19.7	52.9	21.6	57.1
Oregon	24.3	18.9	55.6	16.5	43.2
Maine	23.3	52.8	40.8	2.1	32.6
New Hampshire	20.5	*	56.6	9.3	37.6
Mississippi	19.1	15.7	48.7	8.4	66.0
New Mexico	15.6	17.3	65.4	1.9	19.9
Nevada	12.7	20.5	47.2	0.0	5.5
Nebraska	11.5	10.4	76.5	6.1	37.4
Rhode Island	11.3	20.4	72.6	3.5	58.4
Utah	11.0	20.0	61.8	3.6	49.1
District of Columbia	8.2	23.2	52.4	11.0	6.1
Alaska	7.7	16.9	41.6	27.3	29.9
Vermont	6.9	31.9	59.4	5.8	27.5
Idaho	5.6	28.6	41.1	0.0	30.4
Wyoming	3.8	18.4	55.3	2.6	21.1
Montana	3.6	38.9	36.1	2.8	36.1
North Dakota	3.5	20.0	68.6	2.9	31.4
South Dakota	2.7	44.4	51.9	3.7	55.6
Total **	3682.2	19.4	59.6	10.9	40.6

* Suppressed to avoid disclosure of data of individual companies.

** The total includes territories for which data are not shown here.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, Operations of U.S. Affiliates of Foreign Companies, Preliminary 1988 Estimates (August 1990), Tables F-8 and F-13.

Table 5-17
Average Compensation Per Employee in 1988
Selected Manufacturing Industries
(\$ Thousands)

	U.S. Affiliates of Foreign Companies	Parents of U.S. Multinational Companies
Food and Kindred Products	28.6	25.7
Chemicals and Allied Products	41.5	39.3
Primary and Fabricated Metals	35.6	36.1
Machinery	32.4	39.4
Office and Computing	45.3	49.1
Other Manufacturing	30.5	32.3
All Manufacturing	33.7	37.3

Note: These groupings are by the industry of the affiliate and the industry of the parent. They are on an enterprise basis.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (June 1990), p. 35 and (July 1990), p. 135.

Table 5-18
Employment By Nonbank U.S. Affiliates of Foreign Companies
(Total and as a Percent of Employment by all U.S. Businesses)

Industry	Thousands of Employees			U.S. Affiliates as Percent of All U.S. Business		
	1980	1987	1988	1980	1987	1988
Manufacturing	1065	1472	1667	5.2	7.7	8.5
Chemicals & Allied Products	160	269	281	14.3	26.2	26.4
Stone, Clay, & Glass Products	35	82	93	5.3	13.9	15.4
Primary Metal Industries	62	90	93	5.4	12.2	12.0
Electric & Electronic Equipment	158	202	225	7.5	9.7	10.8
Instruments & Related Products	51	76	79	7.2	11.0	10.7
Food & Kindred Products	98	137	166	5.7	8.4	10.1
Rubber & Misc Plastic Products	37	56	79	5.1	6.9	9.4
Motor Vehicles & Equipment	59	56	64	7.4	6.6	7.5
Nonelectric Machinery	111	121	145	4.5	6.0	6.9
Paper & Allied Products	34	46	46	4.9	6.8	6.6
Printing & Publishing	41	83	102	3.3	5.4	6.4
Fabricated Metal Products	49	58	91	3.0	4.1	6.3
Textile Mill Products	20	27	32	2.4	3.8	4.3
Other Transportation Equipment	22	12	15	2.0	1.0	1.3
Petroleum & Coal Products	58	71	78	*	*	*
Mining	59	68	69	5.7	9.4	9.7
Finance, except Banking	27	83	98	3.0	5.3	6.2
Insurance	61	81	111	3.5	3.9	5.2
Wholesale Trade	141	282	281	2.7	4.7	4.6
Retail Trade	**	633	768	**	3.3	3.9
Transportation	**	87	113	**	2.7	3.4
Real Estate	17	31	31	1.6	2.2	2.2
Services	107	329	375	0.6	1.3	1.4
Construction	42	57	56	1.0	1.1	1.1
Agriculture, Forestry, & Fishing	**	18	19	**	1.0	1.0
Communication & Public Utilities	2	14	15	0.1	0.6	0.7
All Industries	2034	3224	3682	2.7	3.7	4.1

* Not meaningful because data are not comparable.

** Suppressed to avoid disclosure of data of individual companies.

Note: In order to be consistent with the all-U.S.-business data, affiliate employment in the various petroleum subindustries is distributed among the other major industries. The manufacturing and "all industries" totals include some industries for which data are not shown separately. Employment of U.S. affiliates is classified here by industry of sales.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (July issue, various years) and Foreign Direct Investment in the United States, Operations of U.S. Affiliates (various issues).

Table 5-19
Comparison of Affiliates' Gross Product and Sales
with Total U.S. Imports of Goods and Services
(\$ Billions or Percent)

	<u>1977</u>	<u>1987</u>
Nonbank Affiliates:		
Gross Product	35.2	151.9
Sales	194.0	731.4
Total U.S. Imports of Goods and Services	172.8	478.0
Affiliates' Gross Product as a Percent of Imports of Goods and Services	20.4	31.8
Affiliates' Sales as a Percent of Imports of Goods and Services	112.3	153.0

Note: The data on U.S. imports of goods and services are on a balance-of-payments basis. Military and other government imports are excluded.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (June 1990), pp. 51, 76-77.

Table 5-20
Merchandise Exports Shipped By and
Merchandise Imports Shipped to U.S.
Nonbank Affiliates of Foreign Companies
(\$ Millions or Percent)

Year	<u>Exports</u>	<u>Imports</u>	<u>Balance</u>	Exports as a % of Affil. <u>Sales</u>	Imports as a % of Affil. <u>Sales</u>	Affiliate Exports as a % of Total U.S. Mdse. <u>Exports</u>	Affiliate Imports as a % of Total U.S. Mdse. <u>Imports</u>
1977	24858	43896	-19038	12.8	22.6	20.6	28.9
1978	32169	56567	-24398	13.3	23.4	22.6	32.1
1979	44341	63039	-18698	13.5	19.2	24.0	29.7
1980	52199	75803	-23604	12.6	18.4	23.3	30.3
1981	64066	82259	-18193	12.6	16.1	27.0	31.0
1982	60236	84290	-24054	11.6	16.3	28.5	34.0
1983	53854	81464	-27610	10.0	15.2	26.7	30.3
1984	58186	100489	-42303	9.8	16.9	26.5	30.2
1985	56401	113331	-56930	8.9	17.9	26.1	33.5
1986	49560	125732	-76172	7.4	18.7	22.2	34.1
1987	48091	143537	-95446	6.0	18.0	19.2	35.0
1988	59812	149713	-89901	7.0	17.5	18.7	33.5

Note: Because of certain reporting problems, the affiliate trade data are not strictly comparable with the total national trade data. Consequently, these percentages are of use only as they reflect trends.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, Operations of U.S. Affiliates of Foreign Companies (various issues) and Economic Report of the President (February 1990), p. 412.

Table 5-21
Merchandise Imports, Local Content, and Vertical Integration of
U.S. Nonbank Affiliates of Foreign Companies
All Industries

Year	Merchandise Imports as a Percent of Total <u>Purchases</u>	Local Content as a Percent of <u>Sales</u>	Vertical Integration (Ratio of Gross Product to Sales)
1977	27.2	78.6	17.9
1978	28.0	78.1	17.5
1979	22.5	83.0	16.5
1980	21.9	82.7	17.0
1981	19.5	85.8	19.0
1982	20.2	84.4	19.8
1983	19.2	84.5	20.8
1984	21.3	84.2	21.5
1985	22.5	83.0	21.1
1986	23.5	82.2	21.0
1987	24.1	81.4	20.6

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (June 1990), p.51, and additional data supplied by the Bureau.

Table 5-22
Merchandise Imports and Local Content of U.S. Affiliates of Foreign
Companies, By Selected Industries of Affiliates: Affiliates of All
Nationalities and Those Whose Beneficial Owner is Japanese

	Merchandise Imports as a Percent of <u>Total Purchases</u>		Local Content as a Percent of <u>Sales</u>	
	<u>Japan</u>	<u>All Countries</u>	<u>Japan</u>	<u>All Countries</u>
<u>Data for 1977:</u>				
Manufacturing	17	16	88	90
Food & Kindred Products	1	17	99	91
Chemicals & Allied Product	4	9	98	95
Metals	*	19	*	87
Machinery	53	28	62	83
Other Manufacturing	*	15	*	92
Wholesale Trade	37	34	64	68
Motor Vehicles & Equipment	50	56	52	48
All Industries	33	27	69	79
<u>Data for 1987:</u>				
Manufacturing	37	16	74	91
Food & Kindred Products	14	10	90	92
Chemicals & Allied Product	9	11	93	94
Metals	13	19	92	86
Machinery	56	25	60	84
Other Manufacturing	50	14	65	94
Wholesale Trade	47	41	55	62
Motor Vehicles & Equipment	59	65	45	40
All Industries	43	24	62	81

* Suppressed to avoid disclosure of data of individual companies or less than \$500,000 or 0.5 percent.
Note: "Local content of sales" is overstated to the extent that purchases from domestic suppliers include merchandise imports and to the extent that they include purchases of services from foreigners that were not reported separately, and thus could not be broken out. In 1977, the Japanese presence in the U.S. manufacturing sector was very small. Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (June 1990), p. 51, and unpublished data provided by the Bureau.

Table 5-23
U.S. Merchandise Exports and Imports
By U.S. Affiliates of Foreign Companies and Other U.S. Businesses
(Billion dollars)

Year	Total			U.S. Affiliates			All Other U.S. Businesses		
	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
1977	123.2	151.0	-27.8	24.9	43.9	-19.0	98.3	107.1	-8.8
1978	145.9	174.8	-28.8	32.2	56.6	-24.4	113.7	118.2	-4.5
1979	186.5	209.5	-22.9	44.3	63.0	-18.7	142.2	146.5	-4.3
1980	225.7	245.3	-19.5	52.2	75.8	-23.6	173.5	169.5	4.0
1981	238.7	261.0	-22.3	64.1	82.3	-18.2	174.6	178.7	-4.1
1982	216.4	244.0	-27.5	60.2	84.3	-24.1	156.2	159.7	-3.5
1983	205.6	258.0	-52.4	53.9	81.5	-27.6	151.7	176.5	-24.8
1984	224.0	330.7	-106.7	58.2	100.5	-42.3	165.8	230.2	-64.4
1985	218.8	336.5	-117.7	56.4	113.3	-56.9	162.4	223.2	-60.8
1986	227.2	365.4	-138.3	49.6	125.7	-76.2	177.6	239.7	-62.1
1987	254.1	406.2	-152.1	48.1	143.5	-95.4	206.0	262.7	-56.7
1988	322.4	441.0	-118.5	59.8	149.7	-89.9	262.6	291.3	-28.7
1989	363.8	473.2	-109.4	--	--	--	--	--	--

Note: Because of certain reporting problems, the affiliate trade data are not strictly comparable with the total national trade data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, Operations of U.S. Affiliates of Foreign Companies (Various Issues) and International Trade Administration, U.S. Foreign Trade Highlights 1990 (May 1991), p. 29.

Table 5-24
U.S. Merchandise Exports Shipped by, and
Imports Shipped to U.S. Nonbank Affiliates of Foreign Companies
(Billion dollars or Percent)

Exports					Imports			
	<u>Total Exports</u>	<u>To the Foreign Parent Group</u>	<u>Percent</u>	<u>To Others</u>	<u>Imports Total</u>	<u>From the Foreign Parent Group</u>	<u>Percent</u>	<u>From Others</u>
1977	24.9	11.7	47.0	13.2	43.9	30.9	70.3	13.0
1978	32.2	16.6	51.5	15.6	56.6	39.5	69.8	17.7
1979	44.3	22.1	49.8	22.3	63.0	45.3	71.9	17.7
1980	52.2	21.0	40.2	31.2	75.8	47.0	62.0	28.8
1981	64.1	26.9	42.0	37.2	82.3	52.2	63.5	30.1
1982	60.2	25.0	41.5	35.2	84.3	52.0	61.6	32.4
1983	53.9	22.6	41.9	31.3	81.5	54.8	67.3	26.7
1984	58.2	27.1	46.5	31.1	100.5	70.5	70.1	30.0
1985	56.4	25.9	45.9	30.5	113.3	81.7	72.1	31.6
1986	49.6	21.9	44.1	27.7	125.7	93.4	74.3	32.3
1987	48.1	19.1	39.7	29.0	143.5	108.2	75.4	35.3
1988	59.8	24.4	40.9	35.4	149.7	114.3	76.4	35.4

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 5-25
U.S. Exports and Inputs by Affiliates by
Industry of Affiliate
(Billion dollars)

Exports				Imports		
	<u>Total</u>	<u>Mfg.</u>	<u>Other</u>	<u>Total</u>	<u>Mfg.</u>	<u>Other</u>
1977	24.9	3.6	21.3	43.9	5.6	38.3
1978	32.2	4.5	27.6	56.6	7.2	49.4
1979	44.3	6.5	37.8	63.0	8.7	54.5
1980	52.2	9.0	43.2	75.8	10.4	65.4
1981	64.1	13.6	50.5	82.3	13.2	69.0
1982	60.2	12.9	47.4	84.3	12.4	71.9
1983	53.9	12.0	41.8	81.5	14.0	67.4
1984	58.2	13.1	45.1	100.5	18.2	82.3
1985	56.4	12.8	43.6	113.3	18.6	94.7
1986	49.6	12.8	36.8	125.7	20.6	105.1
1987	48.1	15.5	32.6	143.5	24.5	119.0
1988	59.8	21.0	38.9	149.7	29.3	120.4

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 5-26
U.S. Exports and Imports By U.S. Nonbank Affiliates of Foreign Companies
Selected Product Categories
(\$ Millions or Percent)

Product	Exports \$Millions		Affiliate Share of Total Merchandise Exports	
	1980	1987	1980	1987
Food	19358	9835	69.8	51.3
Chemicals	4411	8055	21.3	30.5
Machinery	5429	7465	9.5	10.7
Crude Materials, Inedible, except Fuels	9361	6103	39.3	29.9
Metal Manufactures	3186	3412	26.4	53.1
Petroleum and Products	2295	2564	81.0	65.4
Coal and Coke	2181	1327	47.2	39.4
Beverages and Tobacco	489	869	18.4	23.7
Road Vehicles and Parts	1219	793	9.3	4.0
Other Transport equipment	878	775	6.2	4.3
Other	3392	6895	9.0	13.2
Total	52199	48091	24.1	19.7

Product	Imports \$Millions		Affiliate Share of Total Merchandise Imports	
	1980	1987	1980	1987
Food	6452	6400	40.9	31.1
Chemicals	2955	7112	34.4	43.9
Machinery	11465	35790	35.5	36.0
Crude Materials, Inedible, except Fuels	3744	4193	35.6	36.4
Metal Manufactures	10806	10662	57.7	42.4
Petroleum and Products	11719	10915	15.1	26.3
Coal and Coke	82	23	n.a.	n.a.
Beverages and Tobacco	777	1739	27.9	42.4
Road Vehicles and Parts	16070	47416	61.5	65.2
Other Transport equipment	1001	1544	46.8	27.2
Other	10731	17747	21.3	16.3
Total	75803	143537	31.0	35.4

n.a. Not available.

Note: The affiliate shares are based on total domestic exports. Since the affiliate exports of food may be overstated for 1980 while the affiliate exports of crude materials may be understated for that year, the affiliate export decline from 1980 to 1987 may be smaller for food and larger for crude materials than is indicated here.

The affiliate import shares were calculated by using for the denominator data on general imports. Because of certain reporting problems, the BEA affiliate data are not strictly comparable with the data on total trade from the Bureau of the Census. The data come from different sources--the affiliate data are based on company records, while the Census data are compiled from documents filed by the shipper with the U.S. Customs Service. In addition, the affiliate data are on a fiscal year basis, while the total trade data are on a calendar year basis. Further, while affiliates were asked to provide data on a "shipped" rather than a "charged" basis, some cases of erroneous reporting probably occurred and were not identified.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States (October 1983 and August 1990) and Statistical Abstract of the United States 1990, Table Nos. 1410 and 1411.

Table 5-27
Merchandise Exports and Imports in 1987
By U.S. Affiliates of Foreign Companies
Industry of Affiliate By Product
(Million dollars)

	Industry of Affiliate (a)				
<u>Product</u>	<u>Wholesale Trade</u>	<u>Manu- facturing</u>	<u>Pet- roleum</u>	<u>Retail Trade</u>	<u>Total</u>
<u>Exports</u>					
Food	9260	448	0	(b)	9835
Beverages and Tobacco	(b)	459	0	(b)	869
Crude Materials, Inedible, except Fuels	5209	619	(b)	0	6103
Petroleum and Products	2256	85	223	0	2564
Coal and Coke	459	(b)	(b)	0	1327
Chemicals	1830	5379	840	0	8055
Machinery	3355	3956	11	9	7465
Road Vehicles and Parts	408	383	0	1	793
Other Transportation Equipm	(b)	177	0	0	775
Metal Manufactures	2643	710	(b)	0	3412
Other	(b)	(b)	(b)	41	6895
Total	29165	15487	1186	948	48091
<u>Imports</u>					
Food	5419	834	0	144	6400
Beverages and Tobacco	(b)	840	0	(b)	1793
Crude Materials, Inedible, except Fuels	2786	1332	(b)	0	4193
Petroleum and Products	1075	(b)	8666	0	10915
Coal and Coke	(b)	7	0	0	23
Chemicals	2823	4092	(b)	(c)	7112
Machinery	27693	7845	9	(b)	35790
Road Vehicles and Parts	46018	1393	(c)	0	47416
Other Transportation Equipm	720	799	0	0	1544
Metal Manufactures	7930	2481	5	0	10662
Other	(b)	(b)	(b)	(b)	17747
Total	107278	24546	8971	2134	143537

(a) Only selected categories of industries of affiliate are shown here.

(b) Suppressed to avoid disclosure of information on individual companies.

(c) Less than \$500,000.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Foreign Direct Investment in the United States, 1987 Benchmark Survey, Final Results (August 1990), Tables G-10 and G-16.

Table 6-1
U.S. Electronics Industry
Affiliate's and Total U.S. Electronic Production, 1990

<u>Industry</u>	<u>SIC</u>	(Number in thousands)		Percent of
		<u>Affiliates</u>	<u>U.S. Total</u>	<u>Total</u>
<u>Computers & Peripherals</u>		33.0	103.3	31.9
Computers	3571	24.3	70.6	34.4
Peripherals	3575-77	8.7	32.7	26.6
<u>Household Video, Audio</u>		16.7	26.8	62.3
<u>Telecommunications</u>	366	31.5	130.9	24.0
Telephone Apparatus	3661	21.7	71.7	30.3
<u>Measuring Instruments</u>	382	18.7	178.4	10.4
Ind. Process Controls	3823	6.1	34.0	17.9
Electrical Measuring	3852	4.4	48.0	9.2
<u>Medical Equipment</u>	384	13.2	142.6	9.2
Search and navigation	381	4.0	93.0	4.3
Photographic, copiers	386	5.0	44.1	11.4
<u>Electronic Components</u>	367	58.4	337.0	17.3
Semiconductors	3674	18.4	94.7	19.4
Electron & TV Tubes	3671	10.2	22.3	45.7
Components, nec.	3679	6.9	91.5	7.5
<u>Audio and Computer-related</u>				
Magnetic and optical recording media	3695	8.8	16.2	54.3
Total		191.3	1,072.3	17.8

Sources: U.S. Department of Labor, Bureau of Labor Statistics. Employment and Earnings, March 1991. Household video and audio based on Census data. Affiliates' data compiled by Economics and Statistics Administration, Office of Business Analysis.

Table 6-2
U.S. Electronics Industry
Workers and Plants, 1990

<u>Industry Products</u>	<u>SIC</u>	<u>No. of Workers</u>	<u>No. of Plants</u>
<u>Computers and Peripherals, total</u>		33,008	71
Computers	3571	24,275	33
Mainframes		13,000	2
PC & Laptops		6,830	10
Workstations		2,160	6
Computer disc drives	3572	2,864	16
Computer monitors	3575	233	3
Computer Printers, Keyboards	3577	5,636	19
<u>Consumer Electronics</u>			
Color T.V., Radio, Audio	3651	16,678	33
Automotive audio, speakers		1509	8
<u>Telecommunications, total</u>		31,491	60
Telephone Apparatus	3661	21,720	35
Digital PBX		3,818	5
Communications Equipment	3663	9,271	23
Cellular Mobile Phone		2,188	8
Satellites		3,300	2
Electronic detection equipment	3669	500	2
<u>Instruments, total</u>	<u>3821-29</u>	18,682	74
Industrial Process Instruments	3823	6,068	15
Electric and Signal Testing	3825	4,384	19
Laboratory Instruments	3826	3,935	12
<u>Medical Equipment, total</u>	<u>3841-45</u>	13,235	42
Electromedical Apparatus	3845	6,069	18
Magnetic Resonance Imaging		265	2
Ultrasound diagnostic		2,135	3
Cardiac pacemakers		2,228	2
<u>Other</u>			
Avionics, radar, sonar	3812	3,972	7
Copiers & photographic equip.	3861	4,982	21
<u>Semiconductors and Electronic Components, total</u>		58,402	136
Semiconductors	3674	18,419	49
Electron Tubes, TV and other	3671	10,205	13
Printed Circuit Boards	3672	10,815	22
Electronic Capacitors	3675	10,164	16
Resistors, Coils, Connectors	3676-78	1,880	15
Electronic Components, nec.	3679	6,919	28
<u>Semiconductor Manufacturing Equipment, total</u>		3,169	26
Semiconductor Manufacturing	3559	2,086	13
Semiconductor Testing	3825	991	10
Electron beam accelerator	3699	92	3
<u>Semiconductor Materials, total</u>		6,697	32
Silicon ingots and wafers	3339	3,670	15
Polycrystalline silicon		490	2
Silicon wafers		3,050	10
Galium Arsenide wafers		130	2
Semiconductor ceramic packages	3264	2,050	6
Lead frames for semiconductors	3469	375	6
Sputtering targets	3499	325	2
Quartz for semiconductors	3679	217	3

Table 6-2 (cont'd)

	<u>SIC</u>	<u>No. of Workers</u>	<u>No. of Plants</u>
<u>Computer-Related Products</u>			
Floppy, hard disks	3695	3,163	12
Hard magnetic disks		1,930	4
Floppy disks		1,233	8
<u>Audio-Related Products, total</u>			
Pre-recorded records, tapes	3652	6,239	16
Blank magnetic tapes, disks	3695	2,550	5
		5,519	14
TOTAL		202,607	537

Data Sources: Data on employment and plants were compiled by the Economics and Statistics Administration, Office of Business Analysis from the following directories of acquisitions and plants published by: International Trade Administration, Japan Economic Institute, Dunn's Industrial Guide, 1990-91; Corptech Directory; Electronics Industry Association--television plants.

Table 6-3
U.S. Electronics Sector
Production Workers in U.S. Affiliates of Foreign Firms, 1990

<u>State</u>	<u>Affiliates (1990)</u>		<u>State Total (1987)</u>	
	<u>No. of Workers</u>	<u>No. of Plants</u>	<u>No. of Plants</u>	<u>No. of Workers</u>
California	60,826	197	4,633	213,200
Massachusetts	18,415	30	1,069	53,000(D)
Florida	15,953	16	760	41,500
Texas	11,025	25	1,025	51,800
Tennessee	9,519	10	197	10,400
New York	9,303	22	1,438	67,600(D)
Georgia	9,020	22	256	7,000 (D)
Indiana	7,792	15	317	16,500
New Jersey	6,898	32	--	--
Pennsylvania	6,417	17	--	--
Ohio	6,059	16	--	--
North Carolina	4,943	13	--	--
South Carolina	4,800	5	--	--
Maryland	3,599	8	--	--
Oregon	3,693	12	--	--
Illinois	3,493	21	--	--
Michigan	2,412	6	--	--
Washington	2,497	8	--	--
Utah	1,785	4	--	--
Alabama	1,646	2	--	--
Arizona	1,628	4	--	--
Rhode Island	1,610	3	--	--
Virginia	1,540	6	--	--
Missouri	1,167	2	--	--
Colorado	1,026	7	--	--
Nebraska	850	1	--	--
Idaho	840	1	--	--
New Hampshire	774	6	--	--
Kansas	547	3	--	--
Connecticut	520	2	--	--
Minnesota	497	4	--	--
Oklahoma	493	4	--	--
Arkansas	450	1	--	--
Maine	310	2	--	--
Wisconsin	300	1	--	--
Louisiana	300	1	--	--
Kentucky	160	3	--	--
Utah	130	2	--	--
Mississippi	130	1	--	--
South Dakota	60	1	--	--
Nevada	15	1	--	--
TOTAL	203,442	537	--	--

(D) Substantial amounts of employment not disclosed.

Sources: Bureau of the Census. Affiliates data compiled by
Economics and Statistics Administration. See Database Sources.

Table 7-1
U.S. Automotive Industry Affiliate's Workers and
Plants, By Industry, 1990

<u>SIC</u>	<u>Industry</u>	<u>No. of Workers</u>	<u>No. of Plants</u>
<u>Vehicles</u>		<u>35,768</u>	<u>17</u>
3711	Cars and Pickup Trucks	26,653	8
3711	Heavy Duty Trucks	7,400	6
3713	Truck cabs, cargo beds	1,845	3
<u>Tires and Parts</u>		<u>39,308</u>	<u>29</u>
3011	Tires for cars and trucks	37,028	25
2296	Tire chord & fabric	2,030	3
2822	Synthetic rubber	250	1
<u>Stampings</u>		<u>9,06123</u>	
3465	Stampings & welded parts	9,061	23
<u>Bearings</u>		<u>7,062</u>	<u>18</u>
3562	Ball and roller bearings	7,062	18
<u>Windows and Parts</u>		<u>6,775</u>	<u>25</u>
3211	Automotive glass	4,405	9
3231	Safety glass and mirrors	1,468	11
3442	Window frames, molding, pipe	902	5
<u>Seats and Parts</u>		<u>6,46930</u>	
2531	Automotive seats	3,659	19
2399	Seat covers	2,230	8
3499	Seat frames	580	3
<u>Rubber Parts</u>		<u>5,430</u>	<u>26</u>
3053	Rubber products, seals	4,129	15
3052	Rubber hose and belts	460	5
3061	Rubber engine mounts, etc.	541	5
3069	Weather strip	300	1
<u>Engine Parts</u>		<u>4,833</u>	<u>26</u>
3592	Pistons, valves, valve seats	3,602	14
3519	Engine and turbocharger parts	303	8
3312	Piston rings, etc.	250	1
3714	Misc. engine parts	550	3
<u>Air Conditioners and Parts</u>		<u>4,606</u>	<u>16</u>
3585	Air conditioners and parts	4,106	15
3714	Controls for air conditioning	500	1
<u>Electrical Equipment for Engines</u>		<u>4,555</u>	<u>17</u>
3694	Wiring harnesses for engines	3,281	9
3678	Connectors for wire harness	155	3
3699	Starters, alternators, coils	1,119	5
<u>Plastic Parts, Trim</u>		<u>3,101</u>	<u>18</u>
3089	Trim, bumpers, bearings, etc.	3,101	18
<u>Safety Equipment</u>		<u>2,681</u>	<u>8</u>
2221	Material for air bags	485	2
2399	Seat belts, restraints	1,731	4
3493	Seat belt springs	100	1
3829	Sensors for air bags	365	1
<u>Fuel Injection Systems</u>		<u>2,330</u>	<u>5</u>
3714	Fuel injectors, pumps, etc.	2,330	5
<u>Engines</u>		<u>1,950</u>	<u>1</u>
3714	Passenger car engines	1,950	1

Table 7-1 (cont'd)

<u>Automotive Springs</u>		<u>1,831</u>	<u>9</u>
3493	Steel coil and leaf springs	1,831	9
<u>Wheels</u>		<u>1,854</u>	<u>9</u>
3714	Wheels, steel and aluminum	1,566	8
<u>Instrument Panels</u>		<u>1,529</u>	<u>6</u>
3087	Instrument panels	250	1
3089	Plastic instrument panels	600	3
3714	Instrument panels, dashboards	350	1
3824	Speedometers, gauges	329	
<u>Pollution Controls</u>		<u>1,517</u>	<u>3</u>
3714	Pollution controls, thermostats	1,000	1
3714	Catalytic converters	517	2
<u>Audio Equipment</u>		<u>1,509</u>	<u>8</u>
3651	Automotive audio, speakers	1,509	8
<u>Water and fuel pumps</u>		<u>1,304</u>	<u>3</u>
3714	Automotive pumps, water, fuel	1,304	3
<u>Radiators and Heaters</u>		<u>1,285</u>	<u>3</u>
3433	Radiators	85	1
3714	Radiators and heater cores	1,200	2
<u>Fuel and Brake Lines</u>		<u>1,134</u>	<u>10</u>
3317	Steel fuel and brake lines	1,134	10

Sources: Compiled by the Economics and Statistics Administration, Office of Business Analysis from directories of plants published by the Motor Vehicle Manufacturers Association, Japan Economic Institute, Auto Parts International, Dun's Industrial Guide, Rubber and Plastics, and the International Trade Administration. See Database Sources.

Table 7-2
U.S. Automotive Industry Affiliate's Workers
and Plants, by Industry, 1990
(Vehicles, Tires, Parts)

<u>State</u>	<u>Affiliates (1990)</u>		<u>State Total (1987)</u>	
	<u>No. of Plants</u>	<u>No. of Workers</u>	<u>No. of Plants</u>	<u>No. of Workers</u>
Ohio	68	24,148	474	128,400
Tennessee	48	19,107	159	20,800
Michigan	58	17,557	857	230,800
Kentucky	39	14,178	77	(D)
South Carolina	13	12,540	77	3,500(D)
North Carolina	22	12,060	133	17,500(D)
Illinois	27	11,921	293	20,800
Indiana	50	11,802	4035	3,500
Alabama	7	7,582	--	--
California	16	5,759	--	--
New York	9	4,969	--	--
Pennsylvania	8	4,376	--	--
Virginia	10	4,316	--	--
Iowa	8	4,134	--	--
Oklahoma	2	4,020	--	--
Texas	10	2,712	--	--
Georgia	10	2,335	--	--
Wisconsin	10	2,207	--	--
Missouri	11	2,172	--	--
Mississippi	4	1,675	--	--
New Hampshire	3	1,456	--	--
New Jersey	3	740	--	--
Arkansas	3	560	--	--
Minnesota	1	410	--	--
Delaware	2	218	--	--
Washington	1	175	--	--
Maryland	11	75	--	--
Nebraska	1	125	--	--
Vermont	1	60	--	--
Nevada	1	30	--	--
Colorado	1	25	--	--
Connecticut	1	25	--	--
Maine	2	25	--	--
Kansas	1	na.	--	--
TOTAL	461	175,217	--	--

(D) Substantial amounts of employment not disclosed.

Sources: Bureau of the Census, and, for affiliates, from database compiled by the Economics and Statistics Administration, Office of Business Analysis.

Table 8-1
U.S. Foreign Owned Steel Affiliates by Country of Ownership, 1980, 1988

	<u>1980</u>	<u>1988</u>
Japan	5	18
Canada	11	5
West Germany	6	4
Sweden	2	4
France	3	4
Belgium	2	3
United Kingdom	1	2
United States	-	2*
South Korea	-	1
Italy	-	1
Norway	-	1
Netherlands	2	1
Turkey	-	1
Australia	1	1
China	-	1

* Affiliates that are ultimately owned by U.S. companies but that have foreign parents in Bermuda and Netherlands Antilles.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 8-2
Selected Data of U.S. Steel Industry Foreign Owned Affiliates
(Million dollars)

<u>Year</u>	<u>Number of Affiliates</u>	<u>Total Assets</u>	<u>Sales</u>	<u>Net Income</u>	<u>Employees</u>
1977	24	996	1,019	-14	11,858
1978	25	1,118	1,407	36	12,947
1979	34	1,449	1,814	51	17,518
1980	39	2,257	2,786	9	22,562
1981	43	2,972	3,271	49	25,616
1982	43	3,084	2,838	-143	21,645
1983	45	3,017	2,985	-167	21,055
1984	48	5,185	6,218	-11	38,020
1985	51	5,531	6,410	-286	37,480
1986	50	5,114	6,360	-45	32,615
1987	47	5,774	7,509	173	39,300
1988	50	6,425	8,371	268	38,400

Note: Industry of affiliate basis.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 9-1
U.S. Chemicals Manufacturing Industry Affiliates' Investment Outlays 1/
(Millions of Dollars)

<u>Industry</u>	<u>By Type of Investment</u>			<u>By Type of Investor</u>	
	<u>Total</u>	<u>Acquisitions</u>	<u>Establishments</u>	<u>Foreign direct Investors</u>	<u>U.S. Affiliates</u>
1980					
All Chemicals & Industries	253	242	10	3	250
Industrial 2/	176	(D)	(D)	0	176
Drugs	20	18	2	18	
Other 3/	57	(D)	(D)	1	56
1988					
All Chemicals & Industries	2,918	2,484	434	534	2,384
Industrial	735	711	24	93	642
Drugs	859	496	363	366	493
Soap and toiletries	554	554	0	37	517
Other 4/	769	722	47	38	731
1989					
All Chemicals & Industries	11,005	10,217	788	6,824	4,180
Industrial	1,703	1,703	0	457	1,245
Drugs	6,632	5,900	433	5,885	447
Soap and toiletries	1,732	1,731	1	15	1,717
Other 4/	1,238	883	355	467	771

Note: A (D) indicates that data have been suppressed to avoid disclosure of data of individual companies.

1/ Data on industry of affiliate basis.

2/ Industrial chemicals include plastics and synthetic products (SIC 282).

3/ Includes soap, cleaners and toiletries, agricultural chemicals and chemicals not elsewhere classified.

4/ Includes agricultural and chemicals not elsewhere classified.

5/ Figures for 1989 are preliminary.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 9-2
U.S. Chemical Manufacturing Industry Affiliates Gross Stock of Property,
Plant and Equipment by Country of UBO 1/

	Industry									
	All Chemical Industries		Industrial 2/		Drugs		Soap, Cleaners and Toiletries		Other 3/	
	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)
1980										
All Countries	18,378	100.0	11,273	100.0	1,590	100.0	1,157	100.0	4,357	100.0
Canada	330	1.8	(D)	(D)	0	0.0	(D)	(D)	(D)	(D)
Total, Europe	17,562	95.6	11,011	97.7	1,369	86.1	1,127	97.4	4,056	93.1
France	1,129	6.1	528	4.7	(D)	(D)	(*)	0.0	(D)	(D)
West Germany	7,430	40.4	3,890	34.5	39	2.5	(D)	(D)	(D)	(D)
Netherlands	2,077	11.3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Switzerland	2,171	11.8	(D)	(D)	(D)	(D)	77	6.7	(D)	(D)
United Kingdom	4,165	22.7	3,788	33.6	(D)	(D)	137	11.8	(D)	(D)
Japan	272	1.5	(D)	(D)	(D)	(D)	2	0.2	(D)	(D)
1987										
All Countries	54,832	100.0	44,024	100.0	5,793	100.0	2,956	100.0	2,059	100.0
Canada	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Total, Europe	(D)	(D)	(D)	(D)	5,121	88.4	2,883	97.5	1,763	85.6
France	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
West Germany	9,022	16.5	7,630	17.3	337	5.8	720	24.4	336	16.3
Netherlands	2,866	5.2	(D)	(D)	0	0.0	(D)	(D)	0	0.0
Switzerland	4,052	7.4	(D)	(D)	3,752	64.8	219	7.4	(D)	(D)
United Kingdom	6,598	12.0	5,418	12.3	820	14.2	(D)	(D)	(D)	(D)
Japan	1,052	1.9	845	1.9	172	3.0	0	0.0	35	1.7
1988 4/										
All Countries	58,246	100.0	45,827	100.0	6,526	100.0	3,455	100.0	2,437	100.0
Canada	(D)	(D)	(D)	(D)	42	0.6	60	1.7	467	19.2
Total, Europe	27,824	47.8	16,855	36.8	5,789	88.7	3,355	97.1	1,824	74.8
France	(D)	(D)	(D)	(D)	0	0.0	7	0.2	(D)	(D)
West Germany	9,958	17.1	8,285	18.1	366	5.6	877	25.4	430	17.6
Netherlands	3,340	5.7	(D)	(D)	0	0.0	(D)	(D)	0	0.0
Switzerland	4,571	7.8	42	0.1	4,268	65.4	222	6.4	39	1.6
United Kingdom	6,101	10.5	4,906	10.7	960	14.7	(D)	(D)	(D)	(D)
Japan	1,198	2.1	921	2.0	174	2.7	21	0.6	82	3.4

Note: A (D) indicates that data have been suppressed to avoid disclosure of data of individual companies.
An (*) indicates a value of between (-\$500,000 and \$500,000)

1/ On industry of affiliate basis.

2/ Industrial chemicals includes plastics and synthetics (SIC 282) products.

3/ Other includes agricultural chemicals, paints, and other chemicals not elsewhere classified.

4/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis and the Office of Business Analysis.

Table 9-3
U.S. Chemicals Manufacturing Industry Affiliates' Gross Stock of
Property, Plant and Equipment by State, 1980 and 1988 1/
(Millions of Dollars)

	<u>1980</u>	<u>1988 2/</u>		<u>1980</u>	<u>1988 2/</u>
Total, All Regions:	18,378	58,246			
New England:	578	1,198	Southeast contd.:		
Connecticut	82	483	Georgia	625	873
Maine	(D)	35	Kentucky	131	522
Massachusetts	272	596	Louisiana	932	3,234
New Hampshire	42	15	Mississippi	(D)	384
Rhode Island	139	65	North Carolina	1,052	3,169
Vermont	(D)	4	South Carolina	1,318	2,286
			Tennessee	553	1,889
Mideast:	3,747	(D)	Virginia	270	2,639
Delaware	200	(D)	West Virginia	354	3,124
Dist. of Columbia	3	3			
Maryland	226	388	Southwest:	3,077	11,722
New Jersey	2,087	5,067	Arizona	62	92
New York	687	1,458	New Mexico	(D)	(D)
Pennsylvania	544	1,627	Oklahoma	(D)	(D)
			Texas	2,678	10,222
Great Lakes:	1,813	5,194			
Illinois	619	1,790	Rocky Mountains:	253	1,132
Indiana	394	940	Colorado	113	352
Michigan	273	974	Idaho	11	21
Ohio	417	1,332	Montana	(D)	(D)
Wisconsin	110	158	Utah	33	118
			Wyoming	(D)	(D)
Plains:	796	(D)			
Iowa	216	258	Far West:	1,276	2,884
Kansas	85	210	California	1,131	2,564
Minnesota	48	164	Nevada	(D)	24
Missouri	373	840	Oregon	(D)	90
Nebraska	55	82	Washington	90	206
North Dakota	(D)	(D)			
South Dakota	(D)	1	Other:	192	2,741
			Alaska	(D)	(D)
Southeast:	6,648	19,495	Hawaii	(D)	27
Alabama	582	924	Puerto Rico	106	346
Arkansas	(D)	132	Other U.S. areas	(D)	(D)
Florida	604	319	Foreign	0	6

Note: A (D) indicates that data have been suppressed to avoid disclosure of data of individual companies. An (*) indicates a value of between (-\$500,000 and \$500,000).

1/ Data on industry of affiliate basis.

2/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis and the Office of Business Analysis.

Table 9-4
U.S. Chemicals Manufacturing Sales by All U.S. Affiliates. 1/
(Millions of Dollars)

<u>Product</u>	<u>U.S. Affiliates</u>		<u>U.S. Industry Total</u>		<u>U.S. Affiliate Share of Industry</u>
	<u>Value</u>	<u>Subindustry Share</u>	<u>Value</u>	<u>Subindustry Share</u>	
1980					
Total Chemicals	\$24,036	100 %	\$157,660	100 %	15%
Industrial 2/	13,071	54	76,691	49	17
Drugs	3,433	14	22,446	14	15
Other 3/	7,532	31	58,523	37	13
1987					
Total Chemicals	\$57,533	100	\$225,200	100	26
Industrial 2/	31,124	54	95,548	42	33
Drugs	10,070	18	42,903	19	23
Other 3/	16,339	28	86,749	39	19
1988 4/					
Total Chemicals	\$63,245	100	\$262,525	100	24
Industrial 2/	34,028	54	116,737	44	29
Drugs	11,687	18	46,490	18	25
Other 3/	17,530	28	99,298	38	18

1/ Data on industry of sales basis.

2/ Industrial chemicals includes plastics and synthetics (SIC 282) products.

3/ Other includes soap, cleaners and toiletries, agricultural chemicals, paints, and other chemicals not elsewhere classified.

4/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, Bureau of the Census and the Office of Business Analysis.

Table 9-5
U.S. Chemical Manufacturing Sales by All U.S. Affiliates, by Country of UBO. 1/

Manufacturing Products

	<u>Total</u>		<u>Industrial 2/</u>		<u>Drugs</u>		<u>Soap, Cleaners and Toiletries</u>		<u>Other 3/</u>	
	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)
1980										
All countries	\$24,036	100.0	\$13,071	100.0	\$3,433	100.0	\$2,693	100.0	\$4,839	100.0
Canada	636	2.6	(D)	(D)	0	0.0	(D)	(D)	499	10.3
Total, Europe	22,336	92.9	12,468	95.4	3,165	92.2	2,482	92.2	4,221	87.2
France	1,459	6.1	547	4.2	191	5.6	(D)	(D)	(D)	(D)
West Germany	6,345	26.4	4,009	30.7	683	19.9	505	18.8	1,148	23.7
Netherlands	5,409	22.5	3,527	27.0	(D)	(D)	(D)	(D)	935	19.3
Switzerland	3,428	14.3	(D)	(D)	1,530	44.6	479	17.8	(D)	(D)
United Kingdom	4,596	19.1	2,646	20.2	626	18.2	434	16.1	890	18.4
Japan	395	1.6	188	1.4	(D)	(D)	(D)	(D)	92	1.9
1987										
All countries	\$57,533	100.0	\$31,124	100.0	\$10,070	100.0	\$5,982	100.0	\$10,357	100.0
Canada	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2,041	19.7
Total, Europe	(D)	(D)	(D)	(D)	8,958	89.0	5,772	96.5	7,796	75.3
France	2,389	4.2	1,537	4.9	(D)	(D)	(D)	(D)	(D)	(D)
West Germany	13,403	23.3	8,104	26.0	2,045	20.3	1,018	17.0	2,236	21.6
Netherlands	8,051	14.0	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Switzerland	5,782	10.0	1,221	3.9	2,942	29.2	891	14.9	727	7.0
United Kingdom	9,922	17.2	3,848	12.4	3,321	33.0	869	14.5	1,884	18.2
Japan	1,494	2.6	983	3.2	(D)	(D)	0	0.0	(D)	(D)
1988 4/										
All countries	\$63,245	100.0	\$34,028	100.0	\$11,687	100.0	\$6,087	100.0	\$11,443	100.0
Canada	11,902	18.8	(D)	(D)	98	0.8	180	3.0	(D)	(D)
Total, Europe	47,421	75.0	22,312	65.6	10,405	89.0	5,844	96.0	8,860	77.4
France	2,632	4.2	1,661	4.9	(D)	(D)	40	0.7	(D)	(D)
West Germany	15,178	24.0	9,241	27.2	2,294	19.6	1,154	19.0	2,489	21.8
Netherlands	8,439	13.3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Switzerland	6,517	10.3	1,175	3.5	3,417	29.2	933	15.3	992	8.7
United Kingdom	11,467	18.1	4,382	12.9	3,991	34.1	1,152	18.9	1,942	17.0
Japan	2,060	3.3	1,409	4.1	360	3.1	24	0.4	267	2.3

Note: A (D) indicates that data has been suppressed to avoid disclosure of data of individual companies.

1/ Data on industry of sales basis.

2/ Industrial chemicals includes plastics and synthetics (SIC 282) products.

3/ Other includes agricultural chemicals, paints, and other chemicals not elsewhere classified.

4/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis and the Office of Business Analysis.

Table 9-6
U.S. Chemicals Manufacturing Employment by All U.S. Affiliates
(Thousands)

<u>Product</u>	<u>U.S. Affiliates</u>		<u>U.S. Industry Total</u>		<u>U.S. Affiliate Share of Industry</u>
	<u>Value</u>	<u>Subindustry Share</u>	<u>Value</u>	<u>Subindustry Share</u>	
1980					
Total chemicals	169.9	100%	1,112.6	100%	15%
Industrial 1/	76.7	45	542.5	49	14
Drugs	44.3	26	199.2	18	22
Soap & toiletries	19.0	11	137.9	12	14
Other 2/	29.8	18	233.1	21	13
1987					
Total	269.4	100%	1,026.6	100%	26
Industrial 1/	132.4	49	451.8	44	29
Drugs	58.3	22	211.7	21	28
Soap & toiletries	24.9	9	152.5	15	16
Other 2/	53.8	20	210.6	21	26
1988 3/					
Total	280.8	100%	1,062.9	100%	26
Industrial 1/	134.7	48	459.1	43	29
Drugs	63.0	22	228.5	21	28
Soap & toiletries	26.1	9	162.8	15	16
Other 2/	57.1	20	212.5	20	27

Note: Data on industry of sales basis.

1/ Industrial chemicals includes plastics and synthetics (SIC 282) products.

2/ Other includes agricultural chemicals, paints, and other chemicals not elsewhere classified.

3/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis and the Office of Business Analysis, U.S. Department of Labor, Bureau of Labor Statistics.

Table 9-7
U.S. Chemicals Manufacturing Employment by all Affiliates, Country of UBO. 1/
(Thousands)

	Manufacturing Product									
	<u>Total Chemicals</u>		<u>Industrial 2/</u>		<u>Drugs</u>		<u>Soap, Cleaners and Toiletries</u>		<u>Other 3/</u>	
	(Emp)	(%)	(Emp)	(%)	(Emp)	(%)	(Emp)	(%)	(Emp)	(%)
1980										
All countries	169.9	100.0	76.7	100.0	44.3	100.0	19.0	100.0	29.8	100.0
Canada	3.3	1.9	0.5	0.7	0	0.0	0.6	3.2	2.2	7.4
Total, Europe	157.1	92.5	74.2	96.7	39.9	90.1	16.4	86.3	26.6	89.3
France	13.6	8.0	4.2	5.5	(D)	(D)	(D)	(D)	5.3	17.8
West Germany	51.9	30.5	32.1	41.9	9.7	21.9	3.2	16.8	6.8	22.8
Netherlands	20.0	11.8	10.4	13.6	0.6	1.4	(D)	(D)	(D)	(D)
Switzerland	30.1	17.7	(D)	(D)	15.9	35.9	4.2	22.1	(D)	(D)
United Kingdom	37.5	22.1	19.8	25.8	9.4	21.2	3.4	17.9	4.9	16.4
Japan	2.6	1.5	0.6	0.8	(D)	(D)	0.1	0.6	(D)	(D)
1987										
All Countries	269.4	100.0	132.4	100.0	58.3	100.0	24.9	100.0	53.8	100.0
Canada	(D)	(D)	(D)	(D)	0.6	1.0	(D)	(D)	(D)	(D)
Total, Europe	190.2	70.6	77.4	58.5	50.4	86.4	22.5	90.4	40.0	74.3
France	11.0	4.1	6.2	4.7	0.1	0.2	(D)	(D)	(D)	(D)
West Germany	66.8	24.8	37.3	28.2	13.9	23.8	4.6	18.5	11.0	20.4
Netherlands	20.4	7.6	6.3	4.8	(D)	(D)	(D)	(D)	(D)	(D)
Switzerland	32.7	12.1	6.1	4.6	17.8	30.5	4.9	19.7	3.8	7.1
United Kingdom	47.7	17.7	17.7	13.4	13.8	23.7	4.9	19.7	11.4	21.2
Japan	7.9	2.9	3.8	2.9	(D)	(D)	0	0.0	(D)	(D)
1988 4/										
All Countries	280.8	100.0	134.7	100.0	63.0	100.0	26.1	100.0	57.1	100.0
Canada	59.6	21.2	(D)	(D)	(D)	(D)	(D)	(D)	11.5	20.1
Total, Europe	199.4	71.0	79.0	58.6	54.4	86.3	23.7	90.8	42.3	74.1
France	10.7	3.8	6.8	5.0	0.2	0.3	0.2	0.8	3.6	6.3
West Germany	68.7	24.5	38.8	28.8	14.1	22.4	5.0	19.2	10.7	18.7
Netherlands	21.5	7.7	5.8	4.3	(D)	(D)	(D)	(D)	(D)	(D)
Switzerland	35.4	12.6	6.5	4.8	19.1	30.3	5.4	20.7	4.5	7.9
United Kingdom	51.9	18.5	17.9	13.3	16.0	25.4	5.0	19.2	13.1	22.9
Japan	10.2	3.6	5.2	3.9	3.1	4.9	0.1	0.4	1.7	3.0

Note: A (D) indicates that data have been suppressed to avoid disclosure of data of individual companies.

1/ Data on industry of sales basis.

2/ Industrial chemicals includes plastics and synthetics (SIC 282) products.

3/ Other includes agricultural chemicals, paints, and other chemicals not elsewhere classified.

4/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis and the Office of Business Analysis.

Table 9-8
U.S. Chemical Manufacturing Industry Affiliates Employment by State. 1/
(Thousands of Employees)

	<u>1980 2/</u>	<u>1988 3/</u>		<u>1980 2/</u>	<u>1988 3/</u>
Total, All Regions:	195.6	270.6			
New England:	9.9	11.1	Southeast (cont.)		
Connecticut	2.0	5.4	Georgia	3.3	7.3
Maine	0.6	0.2	Kentucky	1.9	2.5
Massachusetts	4.6	4.7	Louisiana	4.3	3.9
New Hampshire	0.4	0.3	Mississippi	0.2	1.2
Rhode Island	2.0	0.5	North Carolina	12.1	22.2
Vermont	0.1	(*)	South Carolina	11.4	10.2
Mideast:	54.3	67.5	Tennessee	7.6	10.8
Delaware	1.9	10.3	Virginia	2.7	12.2
Dist. of Columbia	0.0	(*)	West Virginia	2.3	7.5
Maryland	4.9	3.2	Southwest:	10.4	22.8
New Jersey	28.8	30.7	Arizona	0.8	0.7
New York	10.0	12.1	New Mexico	(D)	0.1
Pennsylvania	8.7	11.1	Oklahoma	(D)	1.0
Great Lakes:	33.5	37.4	Texas	9.3	21.1
Illinois	11.8	10.3	Rocky Mountains:	1.8	3.4
Indiana	7.9	6.9	Colorado	0.7	1.7
Michigan	4.6	7.3	Idaho	(D)	(*)
Ohio	5.3	10.2	Montana	0.1	0.6
Wisconsin	3.9	2.7	Utah	0.9	0.7
Plains:	11.5	11.7	Wyoming	(D)	0.4
Iowa	3.2	1.5	Far West:	18.8	27.3
Kansas	1.4	1.9	California	16.6	22.7
Minnesota	0.8	1.7	Nevada	(D)	0.3
Missouri	5.0	5.6	Oregon	(D)	1.0
Nebraska	1.0	0.9	Washington	1.5	3.3
North Dakota	(*)	(*)	Other:	(D)	3.4
South Dakota	(*)	(*)	Alaska	(*)	(*)
Southeast:	54.6	86.0	Hawaii	0.1	0.3
Alabama	3.2	3.3	Puerto Rico	0.6	3.0
Arkansas	0.5	1.4	Other U.S. areas	(D)	(*)
Florida	5.0	3.5	Foreign	(D)	(*)

Note: A (D) indicates that data have been suppressed to avoid disclosure of data of individual companies.
An (*) indicates a value of fewer than 50 employees. Includes all chemicals and allied products.

1/ Data on industry of affiliate basis.

2/ Figures for 1980 were estimated from Industry of Affiliate employment data.

3/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis and the Office of Business Analysis.

Table 9-9
U.S. Chemicals Manufacturing Industry
Affiliates U.S. Exports by Country of UBO. 1/

	Industry									
	<u>All Chemical Industries</u>		<u>Industrial 2/</u>		<u>Drugs</u>		<u>Soap, Cleaners and Toiletries</u>		<u>Other 3/</u>	
	(Mil. \$)	(%)	(Mil. \$)	(%)	(Mil. \$)	(%)	(Mil. \$)	(%)	(Mil. \$)	(%)
1980:										
All Countries	2,133		1,408		210		193		322	
Canada	33	1.5	(D)	(D)	0	0.0	1	0.5	(D)	(D)
Total, Europe	1,965	92.1	1,383	98.2	101	48.1	180	93.3	302	93.8
France	179	8.4	31	2.2	(D)	(D)	0	0.0	(D)	(D)
West Germany	632	29.6	466	33.1	(D)	(D)	10	5.2	(D)	(D)
Netherlands	206	9.7	(D)	(D)	3	1.4	(D)	(D)	0	0.0
Switzerland	250	11.7	(D)	(D)	74	35.2	(D)	(D)	2	0.6
United Kingdom	593	27.8	543	38.6	2	1.0	(D)	(D)	(D)	(D)
Japan	87	4.1	(D)	(D)	(D)	(D)	(D)	(D)	(*)	0.0
1987:										
All Countries	6,849		5,654		750		170		275	
Canada	(D)	(D)	(D)	(D)	(D)	(D)	6	3.5	0	0.0
Total, Europe	(D)	(D)	(D)	(D)	523	69.7	163	95.9	260	94.5
France	181	2.6	(D)	(D)	(D)	(D)	1	0.6	(D)	(D)
West Germany	1,376	20.1	1,280	22.6	5	0.7	(D)	(D)	(D)	(D)
Netherlands	149	2.2	(D)	(D)	0	0.0	(D)	(D)	0	0.0
Switzerland	450	6.6	(D)	(D)	419	55.9	16	9.4	(D)	(D)
United Kingdom	750	11.0	675	11.9	(D)	(D)	1	0.6	(D)	(D)
Japan	235	3.4	93	1.6	(D)	(D)	0	0.0	(D)	(D)
1988: 4/										
All Countries	8,492	6,983	865	224	420					
Canada	(D)	(D)	(D)	(D)	(D)	(D)	4	1.8	(D)	(D)
Total, Europe	4,419	52.0	3,169	45.4	659	76.2	216	96.4	374	89.0
France	214	2.5	(D)	(D)	0	0.0	1	0.4	(D)	(D)
West Germany	2,567	30.2	2,417	34.6	(D)	(D)	(D)	(D)	71	16.9
Netherlands	308	3.6	(D)	(D)	0	0.0	(D)	(D)	0	0.0
Switzerland	585	6.9	13	0.2	556	64.3	14	6.3	2	0.5
United Kingdom	473	5.6	412	5.9	(D)	(D)	1	0.4	(D)	(D)
Japan	259	3.0	113	1.6	131	15.1	2	0.9	12	2.9

Note: A (D) indicates that data have been suppressed to avoid disclosure of data of individual companies.
An (*) indicates a value of between (-\$500,000 and \$500,000)

1/ Data in industry of affiliate basis.

2/ Industrial chemicals includes plastic and synthetic (SIC 282) products.

3/ Other includes agricultural chemicals, paints, and other chemicals not elsewhere classified.

4/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis and the Office of Business Analysis.

Table 9-10
U.S. Chemical Manufacturing Industry Affiliates'
Total U.S. Imports by Country of UBO 1/

	Industry									
	<u>All Chemicals Industries</u>		<u>Industrial 2/</u>		<u>Drugs</u>		<u>Soap, Cleaners and Toiletries</u>		<u>Other 3/</u>	
	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)	(Mil.\$)	(%)
1980										
All Countries	1,744	100.0	1,138	100.0	187	100.0	133	100.0	286	100.0
Canada	(D)	(D)	(D)	(D)	0	0.0	1	0.8	(D)	(D)
Total, Europe	1,461	83.8	1,003	88.1	(D)	(D)	131	98.5	(D)	(D)
France	155	8.9	142	12.5	(D)	(D)	3	2.3	(D)	(D)
West Germany	713	40.9	549	48.2	4	2.1	7	5.3	153	53.5
Netherlands	97	5.6	(D)	(D)	3	1.6	(D)	(D)	0	0.0
Switzerland	251	14.4	(D)	(D)	(D)	(D)	32	24.1	2	0.7
United Kingdom	231	13.2	186	16.3	(D)	(D)	(D)	(D)	14	4.9
Japan	(D)	(D)	(D)	(D)	0	0.0	1	0.8	*	0.1
1987										
All Countries	5,200	100.0	3,468	100.0	1,150	100.0	195	100.0	388	100.0
Canada	(D)	(D)	(D)	(D)	3	0.3	1	0.5	3	0.8
Total, Europe	3,919	75.4	(D)	(D)	1,020	88.7	192	98.5	(D)	(D)
France	300	5.8	31	0.9	(D)	(D)	(D)	(D)	(D)	(D)
West Germany	1,505	28.9	1,432	41.3	(D)	(D)	18	9.2	(D)	(D)
Netherlands	(D)	(D)	86	2.5	0	0.0	(D)	(D)	0	0.0
Switzerland	756	14.5	(D)	(D)	644	56.0	68	34.9	(D)	(D)
United Kingdom	1,080	20.8	662	19.1	301	26.2	47	24.1	70	18.0
Japan	74	1.4	56	1.6	(D)	(D)	0	0.0	(D)	(D)
1988 3/										
All Countries	6,165	100.0	3,845	100.0	1,518	100.0	265	100.0	537	100.0
Canada	(D)	(D)	(D)	(D)	3	0.2	1	0.4	(D)	(D)
Total, Europe	4,805	77.9	(D)	(D)	1,333	87.8	259	97.7	(D)	(D)
France	(D)	(D)	(D)	(D)	0	0.0	10	3.8	(D)	(D)
West Germany	2,114	34.3	2,012	52.3	44	2.9	20	7.5	37	6.9
Netherlands	(D)	(D)	(D)	(D)	0	0.0	(D)	(D)	0	0.0
Switzerland	962	15.6	37	1.0	855	56.3	63	23.8	7	1.3
United Kingdom	1,019	16.5	499	13.0	413	27.2	62	23.4	45	8.4
Japan	70	1.1	36	0.9	14	0.9	3	1.1	17	3.2

Note: A (D) indicates that data have been suppressed to avoid disclosure of data of individual companies.
An (*) indicates a value of between (-\$500,000 and \$500,000).

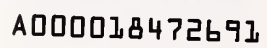
1/ Data on industry of affiliate basis

2/ Industrial chemicals includes plastic and synthetic (SIC 282) products.

3/ Other includes agricultural chemicals, paints, and other chemicals not elsewhere classified.

4/ Figures for 1988 are preliminary estimates.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis and the Office of Business Analysis.



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